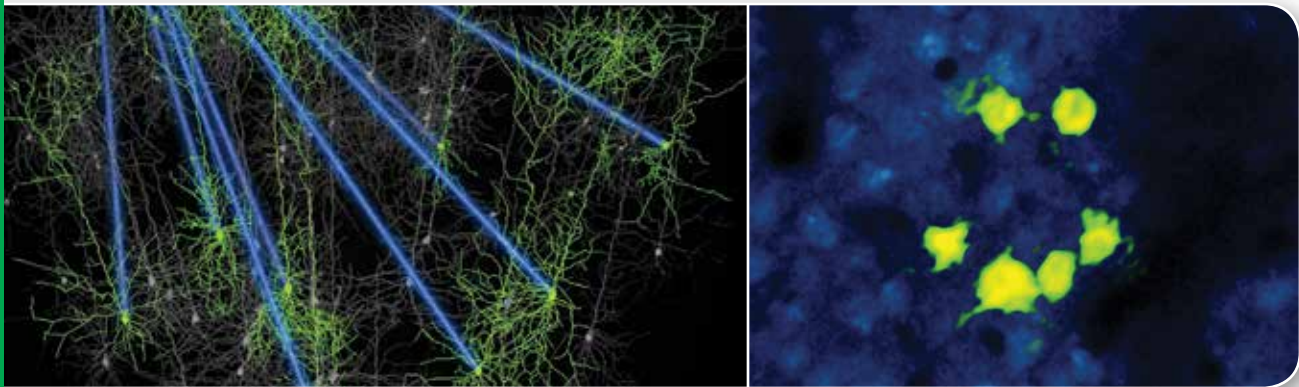




# Lasers for Life Sciences

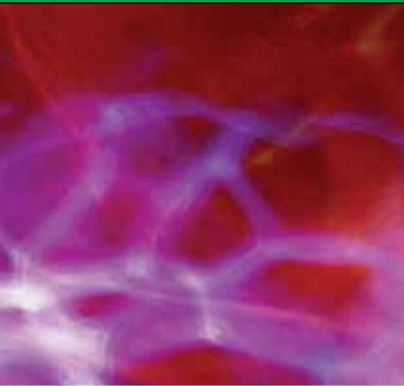
2016 Laser Overview



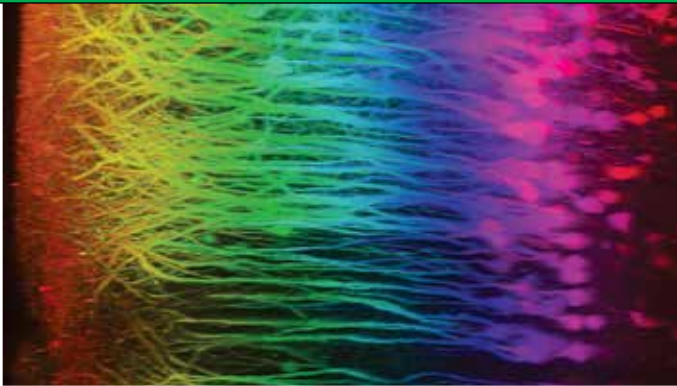
Superior Reliability & Performance

## Lasers for Life Sciences

Overview of Laser Applications



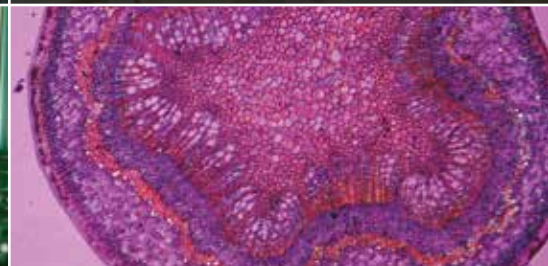
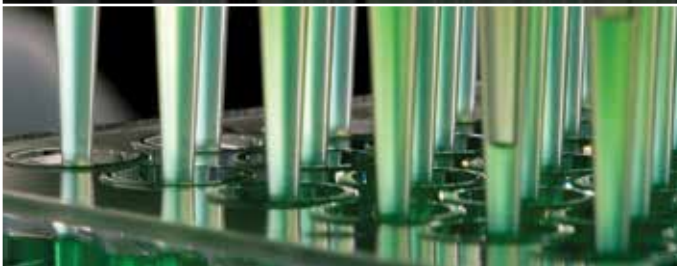
**Flow Cytometry**



**MPE Imaging**



**Medical Diagnostics**

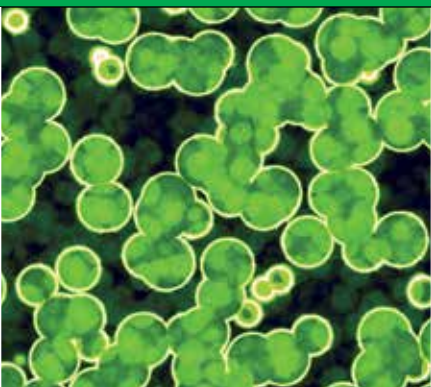


### **Applications:**

- Flow Cytometry
- Confocal Microscopy
- Genomics
- Proteomics
- Medical Diagnostics
- Environmental Monitoring

## Lasers for Life Sciences

### Overview of Laser Applications



**Confocal Microscopy**



**Medical Instrumentation**



**DNA Sequencing**



As one of the fastest growing segments for laser-based solutions, Life Sciences covers a broad range of applications from scientific research leading to medical advances, to clinical functions where lasers are used in diagnostics.

Life science is important to improve our collective health and well-being, and providing the technology that is vital to the advancement of medicine is a major focus of Coherent's life sciences strategy.\* Our lasers enable advances in life science research and clinical and medical applications such as flow cytometry and cell sorting, microscopy, DNA sequencing and retina scanning. Lasers are predominantly used in these applications to excite fluorophores attached to a sample, allowing researchers and clinicians to perform a variety of important tests at both the cellular and molecular level.

Lasers for these applications are as varied as the instrument devices themselves, and span the spectrum from continuous-wave diode or optically pumped semiconductor lasers (OPSL) to ultrafast titanium:sapphire systems. It is our mission to enable new laser based applications taking advantage of a leadership in innovation.

\* We do not include medical therapeutic procedures in "Life Sciences" and have not included our portfolio of lasers for therapeutics such as high power OPSL, semiconductor or CO<sub>2</sub> lasers in this brochure.

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Ultimate Choice. Perfect Match.

OBIS Laser Family

BioRay Laser Family

Sapphire Laser Family

Genesis Laser Family

Femtosecond Lasers

Laser Accessories

# Ultimate Choice. Perfect Match.

Ultimate Choice. Perfect Match.

With nearly 50 years of experience in life sciences, Coherent understands that getting the best results requires a laser that perfectly matches your instrument in terms of wavelength, output power, beam quality, output noise, and budget. That's why we offer the industry's widest choice of laser technologies and performance options.

So, whether your challenge is in cutting edge research or developing a cost-sensitive clinical instrument, you can be sure you'll find the perfect laser for your needs in the following pages.



**Sapphire**

**OBIS LG**

Coherent offers a variety of laser platforms to allow you the freedom to choose. You have the choice, in the coming pages, to select your product by wavelength, power, features or application.

Coherent makes it easy for you to optimize the laser to the work being accomplished... the perfect match for value and performance.

# Ultimate Choice. Perfect Match.

OBIS LX, OBIS LS



BioRay



# Ultimate Choice. Perfect Match.

## Choose Your Laser by **Application**

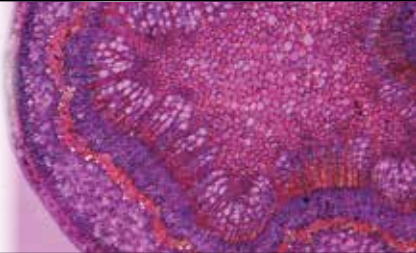
### Flow Cytometry:

- OBIS LX, OBIS LS and Sapphire lasers for visible wavelengths (375 nm to 785 nm)
- OBIS LG for 355 nm in the UV
- BioRay for stable, cost-effective compact systems
- Genesis CX for 355 nm in the UV, high power



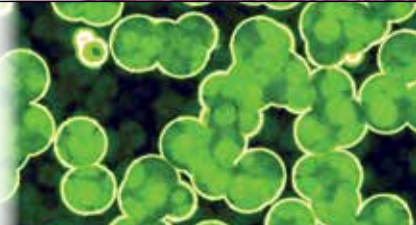
### Medical Diagnostics:

- OBIS LX, OBIS LS, Sapphire, Genesis MX, Genesis CX and OBIS LG lasers for visible wavelengths (375 nm to 785 nm)
- OBIS LG for 355 nm in the UV
- BioRay for stable, cost-effective compact systems



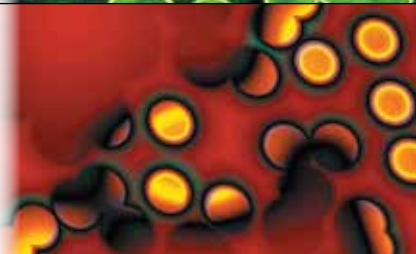
### Confocal Microscopy:

- OBIS LX for high speed modulation
- OBIS Fiber Pigtailed for Single-mode Polarization Maintaining fiber delivery
- OBIS and Sapphire Fiber Pigtailed for 458 nm to 594 nm



### Medical Instrumentation:

- OBIS LX, OBIS LS, Sapphire, Genesis MX, Genesis CX and OBIS LG lasers for visible wavelengths (375 nm to 785 nm)
- OBIS LG for 355 nm in the UV
- BioRay for stable, cost-effective compact systems



### DNA Sequencing:

- Genesis MX lasers for visible wavelengths (460 nm to 639 nm)
- OBIS LX for 660 nm
- OBIS LS, OBIS LG or Sapphire for 532 nm



**Multiphoton Excitation (MPE):** for MPE applications, please refer to Femtosecond Lasers from Coherent on page 115 of this Guide.



# Ultimate Choice. Perfect Match.

## Choose Your Laser by **Features**

<b>Continuous-Wave (CW):</b>  <b>Modulation:</b> Analog to 500 KHz <b>Modulation:</b> Analog to 100 KHz and/or Digital to 50 KHz <b>High Speed Modulation:</b> Analog to 500 KHz and/or Digital to 150 MHz	BioRay, OBIS LS, OBIS LX, Sapphire, OBIS LG, Genesis CX, Genesis MX  BioRay OBIS LS OBIS LX
<b>Fiber Delivery:</b> Fiber Pigtailed, Single-Mode Polarization-Maintaining Fiber Fiber Connector, FC or SMA, 25 $\mu$ m Core, SMA 905, 50 $\mu$ m Core	OBIS LX, OBIS LS, Sapphire Genesis MX, BioRay FR
<b>Single Frequency (Longitudinal Mode)</b>	Sapphire SF, Genesis CX, Genesis MX
<b>OPSL (Optically Pumped Semiconductor Laser):</b> Constant Beam Parameters with Power	OBIS LS, Sapphire, OBIS LG, Genesis CX, Genesis MX
<b>Adjustable Beam Divergence (User Adjustable Lens)</b>	BioRay
<b>Compact Laser with common beam, common footprint, common interface, common accessories</b>	OBIS LX and OBIS LS
<b>6-Laser Remote, either power Remote and Scientific Remote</b>	OBIS LX and OBIS LS
<b>Beam Combining with OBIS Galaxy</b>	OBIS LX with UFC Connector. Optional OBIS LS and Sapphire with UFC conversion
<b>Laser Box for 5-Laser integration with thermal management (cooling), Analog/Digital I/O and laser safety features</b>	OBIS LX and LS (frequently purchased with OBIS Galaxy)

# Ultimate Choice. Perfect Match.

Choose Your Laser by **Wavelength**

	<b>355 nm</b>	OBIS LG up to 50 mW
	<b>375 nm</b>	OBIS LX up to 50 mW
355 nm	<b>405 nm</b>	OBIS LX up to 200 mW. OBIS LX Fiber Pigtailed up to 100 mW. BioRay at 50 mW.
	<b>422 nm</b>	OBIS LX at 100 mW
375 nm	<b>445 nm</b>	OBIS LX at 75 mW. OBIS LX Fiber Pigtailed at 45 mW.
	<b>450 nm</b>	BioRay at 50 mW
405 nm	<b>458 nm</b>	OBIS LX at 75 mW. OBIS LX Fiber Pigtailed at 45 mW. Sapphire up to 75 mW. Sapphire FP at 40 mW.
422 nm	<b>460 nm</b>	Genesis CX up to 1W. Genesis MX up to 2W.
445 nm	<b>473 nm</b>	OBIS LX at 75 mW. OBIS LX Fiber Pigtailed at 50 mW.
450 nm	<b>480 nm</b>	Add Genesis CX up to 2W. Genesis MX up to 2W.
458 nm	<b>488 nm</b>	OBIS LX up to 150 mW. OBIS LX Fiber Pigtailed up to 100 mW. OBIS LS up to 150 mW. OBIS LS Fiber Pigtailed up to 120 mW. BioRay at 20 mW. Sapphire up to 300 mW. Sapphire Fiber Pigtailed up to 200 mW. Sapphire Single Frequency up to 100 mW. Genesis CX up to 4W. Genesis MX up to 5W.
460 nm		
473 nm		
480 nm		
488 nm		
	<b>505 nm</b>	OBIS LX at 50 mW. OBIS LX Fiber Pigtailed at 40 mW.
	<b>514 nm</b>	OBIS LX at 40 mW. OBIS LX Fiber Pigtailed at 30 mW. OBIS LS at 20 mW. OBIS LS Fiber Pigtailed at 15 mW. Sapphire up to 150 mW. Sapphire Fiber Pigtailed up to 120 mW. Genesis CX up to 4W. Genesis MX up to 5W.
505 nm		
514 nm		
520 nm	<b>520 nm</b>	OBIS LX at 40 mW. BioRay at 50 mW.

# Ultimate Choice. Perfect Match.

## Choose Your Laser by **Wavelength**

<b>532 nm</b>	OBIS LG at 3W. OBIS LS up to 150 mW. OBIS LS Fiber Pigtailed up to 120 mW. Sapphire up to 300 mW. Sapphire Fiber Pigtailed up to 120 mW. Sapphire Single Frequency up to 150 mW. Genesis CX up to 10W. Genesis MX up to 8W.	532 nm
<b>552 nm</b>	OBIS LS up to 150 mW. OBIS LS Fiber Pigtailed up to 120 mW. Sapphire up to 200 mW. Sapphire Fiber Pigtailed up to 120 mW.	552 nm
<b>561 nm</b>	OBIS LS up to 150 mW. OBIS LS Fiber Pigtailed up to 120 mW. Sapphire up to 300 mW. Sapphire Fiber Pigtailed up to 200 mW. Genesis CX up to 3W. Genesis MX up to 2W.	561 nm
<b>568 nm</b>	Sapphire up to 200 mW	568 nm
<b>577 nm</b>	Genesis CX up to 3W. Genesis MX up to 5W.	577 nm
<b>588 nm</b>	Sapphire up to 100 mW. Sapphire Fiber Pigtailed at 40 mW.	588 nm
<b>590 nm</b>	Genesis CX up to 2W. Genesis MX up to 2W.	590 nm
<b>594 nm</b>	OBIS LS up to 100 mW. OBIS LS Fiber Pigtailed at 40 mW. Sapphire up to 75 mW. Sapphire Fiber Pigtailed at 40 mW.	594 nm
<b>607 nm</b>	Genesis MX up to 1.25W	607 nm
<b>637 nm</b>	OBIS LX at 140 mW. OBIS LX Fiber Pigtailed at 100 mW.	637 nm
<b>639 nm</b>	Genesis MX up to 2W	639 nm
<b>640 nm</b>	OBIS LX up to 100 mW. OBIS LX Fiber Pigtailed at 75 mW. BioRay at 40 mW.	640 nm
<b>647 nm</b>	OBIS LX at 120 mW. OBIS LX Fiber Pigtailed at 100 mW.	647 nm
<b>660 nm</b>	OBIS LX at 100 mW. OBIS LX Fiber Pigtailed at 75 mW.	660 nm
<b>685 nm</b>	OBIS LX at 40 mW	685 nm
<b>730 nm</b>	OBIS LX at 30 mW	730 nm
<b>785 nm</b>	OBIS LX at 100 mW	785 nm

# Ultimate Choice. Perfect Match.

Choose Your Laser by **Output Power**

**OBIS LG:** 20 mW to 3W



**BioRay:** 20 mW to 50 mW



**OBIS LS:** 20 mW to 150 mW  
**OBIS LX:** 16 mW to 200 mW  
**OBIS FP:** 15 mW to 100 mW



**Sapphire LP:** 10 mW to 300 mW  
**Sapphire SF:** 20 mW to 150 mW  
**Sapphire FP:** 40 mW to 200 mW





# Ultimate Choice. Perfect Match.

Coherent offers a variety of laser platforms to allow you the freedom to choose. The following pages provide the details of the OBIS LG, OBIS LX, OBIS LS, BioRay, Sapphire and Accessories.

Coherent has made it easy for you to optimize the laser to the work being accomplished... the perfect match for value and performance.



# OBIS

## Lasers for Plug-and-Play Simplicity

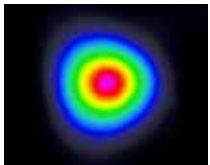
The Coherent OBIS suite of products offers higher signal-to-noise ratio laser technology for a wide range of applications in the Life Sciences, Environmental Monitoring, and Inspection markets.

Our Optically Pumped Semiconductor Laser (OPSL) technology combined with our laser diode solutions delivers the industry-best laser reliability and performance. The OBIS family of smart lasers covers the wavelength spectrum—from the Ultraviolet at 375 nm to the near-Infrared at 785 nm.

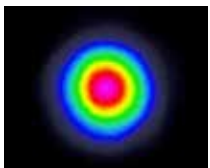
The plug-and-play flexibility allows customers to integrate the product of their choice much faster, thereby reducing their time-to-market and costs.

OBIS lasers deliver superior power, low RMS noise, and higher beam quality that are key customers needs from any laser source.

Coherent has implemented an intelligent design that allows multiple ways to interface with the laser, giving our customers the ability to choose the smartest operation process for their specific application requirements.



**OBIS LX:** The OBIS LX diode lasers deliver a low astigmatism circular beam as a result of our high quality optics technology. The OBIS LX beam measurements are made at the 90/10 Clip Levels to ensure the highest mode quality.



**OBIS LS:** OPSL technology provides the highest quality beam offering excellent circularity and beam parameters (divergence, diameter) that are constant over a wide power range.

OBIS lasers are now compatible with MetaMorph and  $\mu$ Manager Software for microscopy automation and image analysis.



### OBIS Features:

- **Commonality across the spectrum in dimensions, beam and interface**
- **Integrated control electronics**
- **Analog, Digital and mixed modulation modes**

### OBIS Applications:

- **Confocal Microscopy**
- **DNA Sequencing**
- **Flow Cytometry**
- **Medical Imaging and Instrumentation**

[www.Coherent.com/OBIS](http://www.Coherent.com/OBIS)

**Superior Reliability & Performance**

System Specifications	OBIS 375LX	OBIS 405LX	OBIS 413LX*	OBIS 422LX	OBIS 445LX
Wavelength <sup>1</sup> (nm)	375	405	413	422	445
Output Power <sup>2</sup> (mW)	16 50	50, 100, 140 200, 250	100	100	75
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.3	≤1.2 ≤1.3	≤1.2	≤1.2	≤1.2
Beam Asymmetry	≤1:1.2	≤1:1.2	≤1:1.2	≤1:1.2	≤1:1.2
Beam Diameter at 1/e <sup>2</sup> (mm)	0.7 ±0.1	0.8 ±0.1	0.8 ±0.1	0.9 ±0.1	0.6 ±0.1
Beam Divergence (mrad, full-angle)	<1	<1	<1	<1.1	<1.1
Pointing Stability (μrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30	<30	<30
Pointing Stability Over Temp. (μrad/°C)	<5	<5	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05	≤0.05	≤0.05
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5	<0.5	<0.5
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2	<2
Warm-up Time <sup>4</sup> (minutes) (from cold start)	<5	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°				
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control				
Digital Modulation					
Maximum Bandwidth (MHz)	75	150	150	150	150
Rise Time (10% to 90%) (nsec)	<5	<2	<2	<2	<2
Fall Time (90% to 10%) (nsec)	<5	<2	<2	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 75 MHz		>1,000,000:1 at 0 Hz, >250:1 at 150 MHz		
Analog Modulation					
Maximum Bandwidth (kHz)	500	500	500	500	500
Rise Time (10% to 90%) (nsec)	<700	<700	<700	<700	<700
Fall Time (90% to 10%) (nsec)	<700	<700	<700	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1	>1,000,000:1	>1,000,000:1
Static Alignment Tolerances					
Beam Position from Reference <sup>5</sup> (mm)	<1	<1	<1	<1	<1
Beam Angle <sup>5</sup> (mrad)	<5	<5	<5	<5	<5
Beam Waist Position at Exit Window (mm)	n/a	n/a	n/a	n/a	n/a
Laser Safety Classification	3b	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Laser Head Baseplate Temp. (Max., °C)	50	50	50	50	50
Heat Dissipation of Laser Head <sup>6</sup> (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature <sup>7</sup>					
Operating Condition <sup>8</sup> (°C)	10 to 50	10 to 50	10 to 50	10 to 50	10 to 50
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LX versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

For LX versions all residual laser emission at 808 nm pump light or fundamental <0.1 mW.

<sup>3</sup> For LX versions the M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> For LX versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.

<sup>5</sup> See mechanical drawing for exit beam location.

<sup>6</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>7</sup> Non-Condensing. See User Manual for more detail.

<sup>8</sup> For LX versions laser head baseplate temperature needs to be maintained at ≤40°C.

\* Preliminary version.

System Specifications	OBIS 458LX	OBIS 473LX	OBIS 488LX	OBIS 488LS
Wavelength <sup>1</sup> (nm)	458	473	488	488
Output Power <sup>2</sup> (mW)	75	75	50 150	20, 60, 80, 100, 150
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.2	≤1.2	≤1.2	≤1.1
Beam Asymmetry	≤1:1.2	≤1:1.2	≤1:1.2	≤1:1.1
Beam Diameter at 1/e <sup>2</sup> (mm)	0.8 ±0.1	0.8 ±0.1	0.8 ±0.1 0.7 ±0.1	0.7 ±0.05
Beam Divergence (mrad, full-angle)	<1.1	<1.1	<1.2	<1.2
Pointing Stability (μrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30	<30
Pointing Stability Over Temp. (μrad/°C)	<5	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05	≤0.25
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5	<1
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2
Warm-up Time <sup>4</sup> (minutes) (from cold start)	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°			
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control			
Digital Modulation				
Maximum Bandwidth (MHz)	150	150	150	0.05
Rise Time (10% to 90%) (nsec)	<2	<2	<2	<18,000
Fall Time (90% to 10%) (nsec)	<2	<2	<2.5	<2000
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz			Infinite at 0 Hz to 50 kHz
Analog Modulation				
Maximum Bandwidth (kHz)	500	500	500	100
Rise Time (10% to 90%) (nsec)	<700	<700	<700	<3000
Fall Time (90% to 10%) (nsec)	<700	<700	<700	<3000
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1	>50:1
Static Alignment Tolerances				
Beam Position from Reference <sup>5</sup> (mm)	<1	<1	<1	<0.5
Beam Angle <sup>5</sup> (mrad)	<5	<5	<5	<2.5
Beam Waist Position at Exit Window (mm)	n/a	n/a	n/a	±200
Laser Safety Classification	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 8, Max. 12
Laser Head Baseplate Temp. (Max., °C)	50	50	50	40
Heat Dissipation of Laser Head <sup>6</sup> (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 8, Max. 12
Ambient Temperature <sup>7</sup>				
Operating Condition <sup>8</sup> (°C)	10 to 50	10 to 50	10 to 50	15 to 40
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

For LS versions all residual laser emission at 808 nm pump light or fundamental <0.1 mW.

<sup>3</sup> For LX versions the M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> For LS versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.

<sup>5</sup> See mechanical drawing for exit beam location.

<sup>6</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>7</sup> Non-Condensing. See User Manual for more detail.

<sup>8</sup> For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.



System Specifications	OBIS 505LX	OBIS 514LS	OBIS 514LX	OBIS 520LX
Wavelength <sup>1</sup> (nm)	505	514	514	520
Output Power <sup>2</sup> (mW)	50	20	40	40
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.2	≤1.1	≤1.2	≤1.2
Beam Asymmetry	≤1:1.2	≤1:1.1	≤1:1.2	≤1:1.2
Beam Diameter at 1/e <sup>2</sup> (mm)	0.7 ± 0.1	0.7 ± 0.05	0.6 ± 0.1	0.6 ± 0.1
Beam Divergence (mrad, full-angle)	<1.2	<1.2	<1.1	<1.1
Pointing Stability (μrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30	<30
Pointing Stability Over Temp. (μrad/°C)	<5	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.05	≤0.25	≤0.05	≤0.05
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<1	<1	<1
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2
Warm-up Time <sup>4</sup> (minutes) (from cold start)	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°			
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control			
Digital Modulation				
Maximum Bandwidth (MHz)	150	0.05	100	100
Rise Time (10% to 90%) (nsec)	<2	<18,000	<3.5	<3.5
Fall Time (90% to 10%) (nsec)	<2.5	<2000	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	Infinite at 0 Hz to 50 kHz	>1,000,000:1 at 0 Hz, >250:1 at 100 MHz	>1,000,000:1 at 0 Hz, >250:1 at 100 MHz
Analog Modulation				
Maximum Bandwidth (kHz)	500	100	500	500
Rise Time (10% to 90%) (nsec)	<700	<3000	<700	<700
Fall Time (90% to 10%) (nsec)	<700	<3000	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>50:1	>1,000,000:1	>1,000,000:1
Static Alignment Tolerances				
Beam Position from Reference <sup>5</sup> (mm)	<1	<0.5	<1	<1
Beam Angle <sup>5</sup> (mrad)	<5	<2.5	<5	<5
Beam Waist Position at Exit Window (mm)	n/a	±200	n/a	n/a
Laser Safety Classification	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 8, Max. 12	Typical 5, Max. 13	Typical 5, Max. 13
Laser Head Baseplate Temp. (Max., °C)	50	40	50	50
Heat Dissipation of Laser Head <sup>6</sup> (W)	Typical 5, Max. 13	Typical 8, Max. 12	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature <sup>7</sup>				
Operating Condition <sup>8</sup> (°C)	10 to 50	15 to 40	10 to 50	10 to 50
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

For LS versions all residual laser emission at 808 nm pump light or fundamental <0.1 mW.

<sup>3</sup> For LX versions the M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> For LS versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.

<sup>5</sup> See mechanical drawing for exit beam location.

<sup>6</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>7</sup> Non-Condensing. See User Manual for more detail.

<sup>8</sup> For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.

System Specifications	OBIS 532LS	OBIS 552LS	OBIS 561LS	OBIS 594LS
Wavelength <sup>1</sup> (nm)	532	552	561	594
Output Power <sup>2</sup> (mW)	20, 50, 80, 100, 150	20, 60, 80, 100, 150	20, 50, 80, 100, 150	20, 60, 100
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.1	≤1.1	≤1.1	≤1.1
Beam Asymmetry	≤1:1.1	≤1:1.1	≤1:1.1	≤1:1.1
Beam Diameter at 1/e <sup>2</sup> (mm)	0.7 ±0.05	0.7 ±0.05	0.7 ±0.05	0.7 ±0.05
Beam Divergence (mrad, full-angle)	<1.2	<1.2	<1.2	<1.3
Pointing Stability (μrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30	<30
Pointing Stability Over Temp. (μrad/°C)	<5	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.25	≤0.25	≤0.25	≤0.25
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<1	<1	<1	<1
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2
Warm-up Time <sup>4</sup> (minutes) (from cold start)	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°			
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control			
Digital Modulation				
Maximum Bandwidth (MHz)	0.05	0.05	0.05	0.05
Rise Time (10% to 90%) (nsec)	<18,000	<18,000	<18,000	<18,000
Fall Time (90% to 10%) (nsec)	<2000	<2000	<2000	<2000
Modulation Depth (extinction ratio)	Infinite at 0 Hz to 50 kHz			
Analog Modulation				
Maximum Bandwidth (kHz)	100	100	100	100
Rise Time (10% to 90%) (nsec)	<3000	<3000	<3000	<3000
Fall Time (90% to 10%) (nsec)	<3000	<3000	<3000	<3000
Modulation Depth (extinction ratio)	>50:1	>50:1	>50:1	>50:1
Static Alignment Tolerances				
Beam Position from Reference <sup>5</sup> (mm)	<0.5	<0.5	<0.5	<0.5
Beam Angle <sup>5</sup> (mrad)	<2.5	<2.5	<2.5	<2.5
Beam Waist Position at Exit Window (mm)	±200	±200	±200	±200
Laser Safety Classification	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 8, Max. 12	Typical 8, Max. 12	Typical 8, Max. 12	Typical 8, Max. 12
Laser Head Baseplate Temp. (Max., °C)	40	40	40	40
Heat Dissipation of Laser Head <sup>6</sup> (W)	Typical 8, Max. 12	Typical 8, Max. 12	Typical 8, Max. 12	Typical 8, Max. 12
Ambient Temperature <sup>7</sup>				
Operating Condition <sup>8</sup> (°C)	15 to 40	15 to 40	15 to 40	15 to 40
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

<sup>3</sup> For LX versions all residual laser emission at 808 nm pump light or fundamental <0.1 mW.

<sup>4</sup> For LX versions the M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>5</sup> For LX versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.

<sup>6</sup> See mechanical drawing for exit beam location.

<sup>7</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>8</sup> Non-Condensing. See User Manual for more detail.

<sup>9</sup> For LX versions laser head baseplate temperature needs to be maintained at ≤40°C.

System Specifications	OBIS 637LX	OBIS 640LX	OBIS 647LX	OBIS 660LX
Wavelength <sup>1</sup> (nm)	637	640	647	660
Output Power <sup>2</sup> (mW)	140	40, 100	120	100
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.2	≤1.2	≤1.2	≤1.2
Beam Asymmetry	≤1:1.2	≤1:1.2	≤1:1.2	≤1:1.2
Beam Diameter at 1/e <sup>2</sup> (mm)	0.7 ±0.1	0.8 ±0.1	0.8 ±0.1	0.9 ±0.1
Beam Divergence (mrad, full-angle)	<1.3	<1.3	<1.3	<1.3
Pointing Stability (μrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30	<30
Pointing Stability Over Temp. (μrad/°C)	<5	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05	≤0.05
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5	<0.5
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2
Warm-up Time <sup>4</sup> (minutes) (from cold start)	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°			
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control			
Digital Modulation				
Maximum Bandwidth (MHz)	150	150	150	150
Rise Time (10% to 90%) (nsec)	<2	<2	<2	<2
Fall Time (90% to 10%) (nsec)	<2	<2	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz			
Analog Modulation				
Maximum Bandwidth (kHz)	300	500	500	500
Rise Time (10% to 90%) (nsec)	<1200	<700	<700	<700
Fall Time (90% to 10%) (nsec)	<800	<700	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1	>1,000,000:1
Static Alignment Tolerances				
Beam Position from Reference <sup>5</sup> (mm)	<1	<1	<1	<1
Beam Angle <sup>5</sup> (mrad)	<5	<5	<5	<5
Beam Waist Position at Exit Window (mm)	n/a	n/a	n/a	n/a
Laser Safety Classification	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Laser Head Baseplate Temp. (Max., °C)	50	50	50	50
Heat Dissipation of Laser Head <sup>6</sup> (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature <sup>7</sup>				
Operating Condition <sup>8</sup> (°C)	10 to 50	10 to 50	10 to 50	10 to 50
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g) (6 ms)	30	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

<sup>3</sup> For LX versions all residual laser emission at 808 nm pump light or fundamental <0.1 mW.

<sup>4</sup> For LX versions the M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>5</sup> For LX versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.

<sup>6</sup> See mechanical drawing for exit beam location.

<sup>7</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>8</sup> Non-Condensing. See User Manual for more detail.

<sup>9</sup> For LX versions laser head baseplate temperature needs to be maintained at ≤40°C.

System Specifications	OBIS 685LX	OBIS 730LX	OBIS 785LX
Wavelength <sup>1</sup> (nm)	685	730	785
Output Power <sup>2</sup> (mW)	40	30	100
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.2	≤1.2	≤1.2
Beam Asymmetry	≤1:1.2	≤1:1.2	≤1:1.2
Beam Diameter at 1/e <sup>2</sup> (mm)	0.8 ±0.1	0.8 ±0.1	0.7 ±0.1
Beam Divergence (mrad, full-angle)	<1.3	<1.3	<1.7
Pointing Stability (μrad) (over 2 hours after warm-up and ±3°C)	<30	<30	<30
Pointing Stability Over Temp. (μrad/°C)	<5	<5	<5
RMS Noise (%) (20 Hz to 20 MHz)	≤0.05	≤0.05	≤0.05
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<0.5	<0.5	<0.5
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2
Warm-up Time <sup>4</sup> (minutes) (from cold start)	<5	<5	<5
Polarization Ratio	Minimum 100:1, Vertical ±5°	Minimum 100:1, Vertical ±5°	Minimum 100:1, Vertical ±5°
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control		
Digital Modulation			
Maximum Bandwidth (MHz)	150	150	150
Rise Time (10% to 90%)(nsec)	<2	<2	<2
Fall Time (90% to 10%)(nsec)	<2	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz		
Analog Modulation			
Maximum Bandwidth (kHz)	500	500	500
Rise Time (10% to 90%)(nsec)	<700	<700	<700
Fall Time (90% to 10%)(nsec)	<700	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1
Static Alignment Tolerances			
Beam Position from Reference <sup>5</sup> (mm)	<1	<1	<1
Beam Angle <sup>5</sup> (mrad)	<5	<5	<5
Beam Waist Position at Exit Window (mm)	n/a	n/a	n/a
Laser Safety Classification	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Laser Head Baseplate Temp. (Max., °C)	50	50	50
Heat Dissipation of Laser Head <sup>6</sup> (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature <sup>7</sup>			
Operating Condition <sup>8</sup> (°C)	10 to 50	10 to 50	10 to 50
Non-operating Condition (°C)	-20 to 60	-20 to 60	-20 to 60
Shock Tolerance (g)(6 ms)	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

For LS versions all residual laser emission at 808 nm pump light or fundamental <0.1 mW.

<sup>3</sup> For LX versions the M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> For LS versions typical power-on delay 1 minute. For LX versions typical power-on delay 0.1 minutes.

<sup>5</sup> See mechanical drawing for exit beam location.

<sup>6</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>7</sup> Non-Condensing. See User Manual for more detail.

<sup>8</sup> For LS versions laser head baseplate temperature needs to be maintained at ≤40°C.

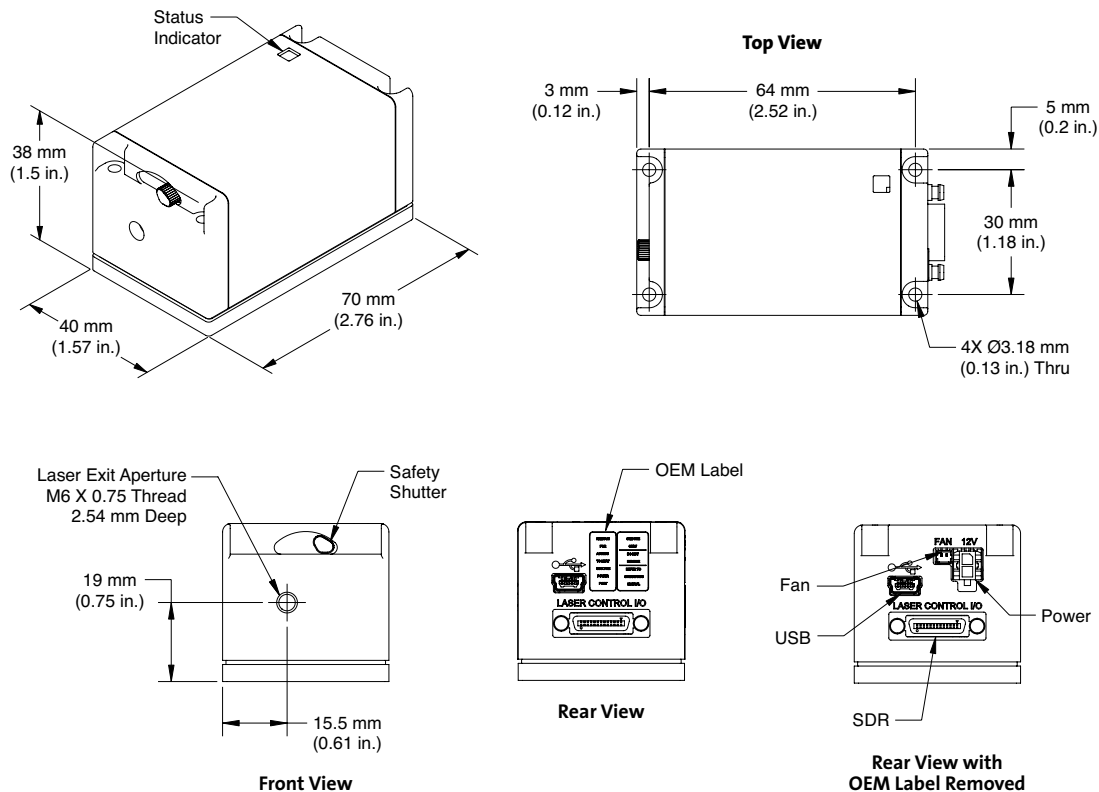


### Utility and Environmental Requirements

Operating Voltage <sup>1</sup> (VDC)	12 ±2
Dimensions (L x W x H)	
Laser	70 x 40 x 38 mm (2.75 x 1.57 x 1.5 in.)
OBIS Remote (optional)	105 x 68 x 36 mm (4.13 x 2.68 x 1.42 in.)
DC Power Supply (optional)	105 x 42 x 33 mm (4.13 x 1.65 x 1.3 in.)
Cable, Laser to OBIS Remote (optional)	1 m (3.28 ft.) (3 meter and 0.3 meter sold separately)
Weights	
Laser	0.16 kg (0.35 lbs.)
OBIS Remote (optional)	0.24 kg (0.53 lbs.)
DC Power Supply (optional)	0.36 kg (0.79 lbs.)
Cable, Laser to OBIS Remote (optional)	0.1 kg (0.22 lbs.) for 1 meter

<sup>1</sup> If user supplied, the DC power supply has to meet the following requirements: power >20W; ripple <5% peak-to-peak; line regulation <0.5%.

### Mechanical Specifications



# OBIS FP

## Fiber Pigtailed Lasers in a Plug-and-Play Platform

The OBIS Fiber Pigtailed (OBIS FP) suite of lasers delivers the simplicity of a plug-and-play platform for a wide range of wavelengths from the violet to the near IR. The fiber pigtail termination is complete with a FC/APC connector. The OBIS FP lasers are based on the OBIS laser platform, offering the same speed-to-market benefits.

The OBIS FP lasers offer superior performance, reliability, and hands-free operation. These lasers combine single-mode polarization-maintaining fiber with an FC/APC connector for a high-quality low-noise laser beam output. They utilize proprietary fiber technology to provide superior lifetimes, and permanent fiber attachments for guaranteed power over time.

OBIS FP lasers are also compatible with MetaMorph and  $\mu$ Manager Software for microscopy automation and image analysis.

### OBIS FP Features:

- All OBIS advantages with fiber delivery
- Single mode, polarization maintaining fiber
- Extended life fiber design

### OBIS FP Applications:

- Confocal Microscopy
- DNA Sequencing
- Flow Cytometry
- Medical Imaging and Instrumentation



[www.Coherent.com/OBISFP](http://www.Coherent.com/OBISFP)

**Superior Reliability & Performance**

System Specifications	OBIS FP 405LX	OBIS FP 413LX*	OBIS FP 445LX
Wavelength <sup>1</sup> (nm)	405	413	445
Output Power <sup>2</sup> (mW)	50, 100	50	45
Output from Fiber	FC/APC; 8° angled <sup>7</sup>	FC/APC; 8° angled <sup>7</sup>	FC/APC; 8° angled <sup>7</sup>
Fiber Cable Type	3 mm Mono-Coil	3 mm Mono-Coil	3 mm Mono-Coil
Fiber Cable Length (m)(minimum)	1	1	1
Fiber Numerical Aperture (NA)(1/e <sup>2</sup> )	0.055	0.055	0.055
Fiber Core Diameter (μm)(typical)	3.5	3.5	3.5
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.1	≤1.1	≤1.1
Beam Asymmetry	≤1:1.1	≤1:1.1	≤1:1.1
RMS Noise (%) (20 Hz to 20 MHz)	≤0.2	≤0.2	≤0.2
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	≤2	≤2	≤2
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2
Long-term Output Power Average (%/hrs.)	≤5/1000	≤5/1000	≤5/1000
Warm-up Time <sup>4</sup> (minutes)(from cold start)	<5	<5	<5
Polarization Ratio	Minimum 100:1	Minimum 100:1	Minimum 100:1
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control		
Digital Modulation			
Maximum Bandwidth (MHz)	150	150	150
Rise Time (10% to 90%)(nsec)	<2	<2	<2
Fall Time (90% to 10%)(nsec)	<2	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz		
Analog Modulation			
Maximum Bandwidth (kHz)	500	500	500
Rise Time (10% to 90%)(nsec)	<700	<700	<700
Fall Time (10% to 90%)(nsec)	<700	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1
Laser Safety Classification	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Laser Head Baseplate Temperature (Max., °C)	50	50	50
Heat Dissipation of Laser Head <sup>5</sup> (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature <sup>6</sup>			
Operating Condition (°C)	10 to 50	10 to 50	10 to 50
Non-operating Condition (°C)	-20 to +60	-20 to +60	-20 to +60
Shock Tolerance (g)(6 ms)	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LX versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

<sup>3</sup> M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> Typical power-on delay 0.1 minutes.

<sup>5</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>6</sup> Non-Condensing. See User Manual for more detail.

<sup>7</sup> Fiber FC/APC connector output not compatible for patchcord-to-patchcord connection.

\* Preliminary version.

System Specifications	OBIS FP 473LX	OBIS FP 488LX	OBIS FP 488LS
Wavelength <sup>1</sup> (nm)	473	488	488
Output Power <sup>2</sup> (mW)	50	30, 100	15 40, 60, 80, 120
Output from Fiber	FC/APC; 8° angled <sup>7</sup>	FC/APC; 8° angled <sup>7</sup>	FC/APC; 8° angled FC/APC; 8° angled <sup>7</sup>
Fiber Cable Type	3 mm Mono-Coil	3 mm Mono-Coil	5 mm Protective Tubing
Fiber Cable Length (m)(minimum)	1	1	1
Fiber Numerical Aperture (NA)(1/e <sup>2</sup> )	0.055	0.055	0.1 0.06
Fiber Core Diameter (μm)(typical)	3.5	3.5	4
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.1	≤1.1	≤1.1
Beam Asymmetry	≤1:1.1	≤1:1.1	≤1:1.1
RMS Noise (%) (20 Hz to 20 MHz)	≤0.2	≤0.2	≤0.25
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	≤2	≤2	≤1
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2
Long-term Output Power Average (%/hrs.)	≤4/1000	≤4/1000	-
Warm-up Time <sup>4</sup> (minutes)(from cold start)	<5	<5	<5
Polarization Ratio	Minimum 100:1	Minimum 100:1	Minimum 100:1
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control		
Digital Modulation			
Maximum Bandwidth (MHz)	150	150	0.05
Rise Time (10% to 90%)(nsec)	<2	<2	<18,000
Fall Time (90% to 10%)(nsec)	<2	<2.5	<2000
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	Infinite at 0 Hz to 50 kHz
Analog Modulation			
Maximum Bandwidth (kHz)	500	500	100
Rise Time (10% to 90%)(nsec)	<700	<700	<3000
Fall Time (10% to 90%)(nsec)	<700	<700	<3000
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>50:1
Laser Safety Classification	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 8, Max. 12
Laser Head Baseplate Temperature (Max., °C)	50	50	40
Heat Dissipation of Laser Head <sup>5</sup> (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 8, Max. 12
Ambient Temperature <sup>6</sup>			
Operating Condition (°C)	10 to 50	10 to 50	15 to 40
Non-operating Condition (°C)	-20 to +60	-20 to +60	-20 to +60
Shock Tolerance (g)(6 ms)	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

<sup>3</sup> M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> Typical power-on delay 0.1 minutes.

<sup>5</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>6</sup> Non-Condensing. See User Manual for more detail.

<sup>7</sup> Fiber FC/APC connector output not compatible for patchcord-to-patchcord connection.

System Specifications	OBIS FP 505LX	OBIS FP 514LS	OBIS FP 514LX	OBIS FP 520LX
Wavelength <sup>1</sup> (nm)	505	514	514	520
Output Power <sup>2</sup> (mW)	50	15	30	25
Output from Fiber	FC/APC; 8° angled <sup>7</sup>	FC/APC; 8° angled	FC/APC; 8° angled <sup>7</sup>	FC/APC; 8° angled <sup>7</sup>
Fiber Cable Type	3 mm Mono-Coil	5 mm Protective Tubing	3 mm Mono-Coil	3 mm Mono-Coil
Fiber Cable Length (m)(minimum)	1	1	1	1
Fiber Numerical Aperture (NA)(1/e <sup>2</sup> )	0.055	0.1	0.055	0.055
Fiber Core Diameter (μm)(typical)	3.5	4	4.5	4.5
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.1	≤1.1	≤1.1	≤1.1
Beam Asymmetry	≤1:1.1	≤1:1.1	≤1:1.1	≤1:1.1
RMS Noise (%) (20 Hz to 20 MHz)	≤0.2	≤0.2	≤0.25	≤0.25
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	≤2	≤1	≤2	≤2
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2
Long-term Output Power Average (%/hrs.)	≤4/1000	-	≤3/1000	≤3/1000
Warm-up Time <sup>4</sup> (minutes)(from cold start)	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1	Minimum 100:1	Minimum 100:1	Minimum 100:1
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control			
Digital Modulation				
Maximum Bandwidth (MHz)	150	0.05	100	100
Rise Time (10% to 90%)(nsec)	<2	<18,000	<3.5	<3.5
Fall Time (90% to 10%)(nsec)	<2	<2000	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz	Infinite at 0 Hz to 50 kHz	>1,000,000:1 at 0 Hz, >250:1 at 100 MHz	>1,000,000:1 at 0 Hz, >250:1 at 100 MHz
Analog Modulation				
Maximum Bandwidth (kHz)	500	100	500	500
Rise Time (10% to 90%)(nsec)	700	<3000	<700	<700
Fall Time (10% to 90%)(nsec)	700	<3000	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>50:1	>1,000,000:1	>1,000,000:1
Laser Safety Classification	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 8, Max. 12	Typical 5, Max. 13	Typical 5, Max. 13
Laser Head Baseplate Temperature (Max., °C)	50	40	50	50
Heat Dissipation of Laser Head <sup>5</sup> (W)	Typical 5, Max. 13	Typical 8, Max. 12	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature <sup>6</sup>				
Operating Condition (°C)	10 to 50	15 to 40	10 to 50	10 to 50
Non-operating Condition (°C)	-20 to +60	-20 to +60	-20 to +60	-20 to +60
Shock Tolerance (g)(6 ms)	30	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

<sup>3</sup> M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> Typical power-on delay 0.1 minutes.

<sup>5</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>6</sup> Non-Condensing. See User Manual for more detail.

<sup>7</sup> Fiber FC/APC connector output not compatible for patchcord-to-patchcord connection.

System Specifications	OBIS FP 532LS		OBIS FP 552LS		OBIS FP 561LS	OBIS FP 594LS
Wavelength <sup>1</sup> (nm)	532		552		561	594
Output Power <sup>2</sup> (mW)	20	40, 60, 80, 120	15	40, 60, 80, 120	40, 60, 80, 120	40
Output from Fiber	FC/APC; 8° angled	FC/APC; 8° angled <sup>7</sup>	FC/APC; 8° angled	FC/APC; 8° angled <sup>7</sup>	FC/APC; 8° angled <sup>7</sup>	FC/APC; 8° angled <sup>7</sup>
Fiber Cable Type	5 mm Protective Tubing		5 mm Protective Tubing		5 mm Protective Tubing	5 mm Protective Tubing
Fiber Cable Length (m)(minimum)	1		1		1	1
Fiber Numerical Aperture (NA)(1/e <sup>2</sup> )	0.1	0.06	0.1	0.06	0.06	0.06
Fiber Core Diameter (μm)(typical)	4		4		4	4
Spatial Mode	TEM <sub>00</sub>		TEM <sub>00</sub>		TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.1		≤1.1		≤1.1	≤1.1
Beam Asymmetry	≤1:1.1		≤1:1.1		≤1:1.1	≤1:1.1
RMS Noise (%) (20 Hz to 20 MHz)	≤0.25		≤0.25		≤0.25	≤0.25
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	≤1		≤1		≤1	≤1
Long-term Power Stability (%) (8 hrs., ±3°C)	<2		<2		<2	<2
Long-term Output Power Average (%/hrs.)	-		-		-	-
Warm-up Time <sup>4</sup> (minutes) (from Cold Start)	<5		<5		<5	<5
Polarization Ratio	Minimum 100:1		Minimum 100:1		Minimum 100:1	Minimum 100:1
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control					
Digital Modulation						
Maximum Bandwidth (MHz)	0.05		0.05		0.05	0.05
Rise Time (10% to 90%)(nsec)	<18,000		<18,000		<18,000	<18,000
Fall Time (90% to 10%)(nsec)	<2000		<2000		<2000	<2000
Modulation Depth (extinction ratio)	Infinite at 0 Hz to 50 kHz					
Analog Modulation						
Maximum Bandwidth (kHz)	100		100		100	100
Rise Time (10% to 90%)(nsec)	<3000		<3000		<3000	<3000
Fall Time (10% to 90%)(nsec)	<3000		<3000		<3000	<3000
Modulation Depth (extinction ratio)	>50:1		>50:1		>50:1	>50:1
Laser Safety Classification	3b		3b		3b	3b
ESD Protection	EN61326-1		EN61326-1		EN61326-1	EN61326-1
Power Consumption (W)	Typical 8, Max. 12		Typical 8, Max. 12		Typical 8, Max. 12	Typical 8, Max. 12
Laser Head Baseplate Temperature (Max., °C)	40		40		40	40
Heat Dissipation of Laser Head <sup>5</sup> (W)	Typical 8, Max. 12		Typical 8, Max. 12		Typical 8, Max. 12	Typical 8, Max. 12
Ambient Temperature <sup>6</sup>						
Operating Condition (°C)	15 to 40		15 to 40		15 to 40	15 to 40
Non-operating Condition (°C)	-20 to +60		-20 to +60		-20 to +60	-20 to +60
Shock Tolerance (g) (6 ms)	30		30		30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LS versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

<sup>3</sup> M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> Typical power-on delay 0.1 minutes.

<sup>5</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>6</sup> Non-Condensing. See User Manual for more detail.

<sup>7</sup> Fiber FC/APC connector output not compatible for patchcord-to-patchcord connection.



System Specifications	OBIS FP 637LX	OBIS FP 640LX	OBIS FP 647LX	OBIS FP 660LX
Wavelength <sup>1</sup> (nm)	637	640	647	660
Output Power <sup>2</sup> (mW)	100	75	100	75
Output from Fiber	FC/APC; 8° angled	FC/APC; 8° angled	FC/APC; 8° angled	FC/APC; 8° angled
Fiber Cable Type	3 mm Mono-Coil	3 mm Mono-Coil	3 mm Mono-Coil	3 mm Mono-Coil
Fiber Cable Length (m)(minimum)	1	1	1	1
Fiber Numerical Aperture (NA)(1/e <sup>2</sup> )	0.09	0.09	0.09	0.09
Fiber Core Diameter (μm)(typical)	4.5	4.5	4.5	4.5
Spatial Mode	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>3</sup>	≤1.1	≤1.1	≤1.1	≤1.1
Beam Asymmetry	≤1:1.1	≤1:1.1	≤1:1.1	≤1:1.1
RMS Noise (%) (20 Hz to 20 MHz)	≤0.2	≤0.2	≤0.2	≤0.2
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	≤2	≤2	≤2	≤2
Long-term Power Stability (%) (8 hrs., ±3°C)	<2	<2	<2	<2
Long-term Output Power Average (%/hrs.)	≤3/1000	≤3/1000	≤3/1000	≤3/1000
Warm-up Time <sup>4</sup> (minutes)(from cold start)	<5	<5	<5	<5
Polarization Ratio	Minimum 100:1	Minimum 100:1	Minimum 100:1	Minimum 100:1
Laser Drive Modes	CW, Analog Modulation, Digital Modulation and Computer Control			
Digital Modulation				
Maximum Bandwidth (MHz)	150	150	150	150
Rise Time (10% to 90%)(nsec)	<2	<2	<2	<2
Fall Time (90% to 10%)(nsec)	<2	<2	<2	<2
Modulation Depth (extinction ratio)	>1,000,000:1 at 0 Hz, >250:1 at 150 MHz			
Analog Modulation				
Maximum Bandwidth (kHz)	300	500	500	500
Rise Time (10% to 90%)(nsec)	<1200	<700	<700	<700
Fall Time (10% to 90%)(nsec)	<800	<700	<700	<700
Modulation Depth (extinction ratio)	>1,000,000:1	>1,000,000:1	>1,000,000:1	>1,000,000:1
Laser Safety Classification	3b	3b	3b	3b
ESD Protection	EN61326-1	EN61326-1	EN61326-1	EN61326-1
Power Consumption (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Laser Head Baseplate Temperature (Max., °C)	50	50	50	50
Heat Dissipation of Laser Head <sup>5</sup> (W)	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13	Typical 5, Max. 13
Ambient Temperature <sup>6</sup>				
Operating Condition (°C)	10 to 50	10 to 50	10 to 50	10 to 50
Non-operating Condition (°C)	-20 to +60	-20 to +60	-20 to +60	-20 to +60
Shock Tolerance (g)(6 ms)	30	30	30	30

<sup>1</sup> Laser-to-laser wavelength tolerance ±2 nm for all OBIS LX versions. For OBIS LX wavelength tolerance of ±5 nm except for 413LX with a 410 nm to 420 nm range, 520LX with a 520 nm to 530 nm range, 640LX with 635 nm to 644 nm range, 660LX with 652 nm to 665 nm range and 685LX with 675 nm to 695 nm range.

<sup>2</sup> Output power is variable in CW Mode from 1 mW (1% for LX Models) to 110% of rated power. Specifications are valid for 100% power.

<sup>3</sup> M<sup>2</sup> measured with ModeMaster with 90/10 clip levels.

<sup>4</sup> Typical power-on delay 0.1 minutes.

<sup>5</sup> Typically 85% of heat load through the base plate. See Users Manual for more detail.

<sup>6</sup> Non-Condensing. See User Manual for more detail.

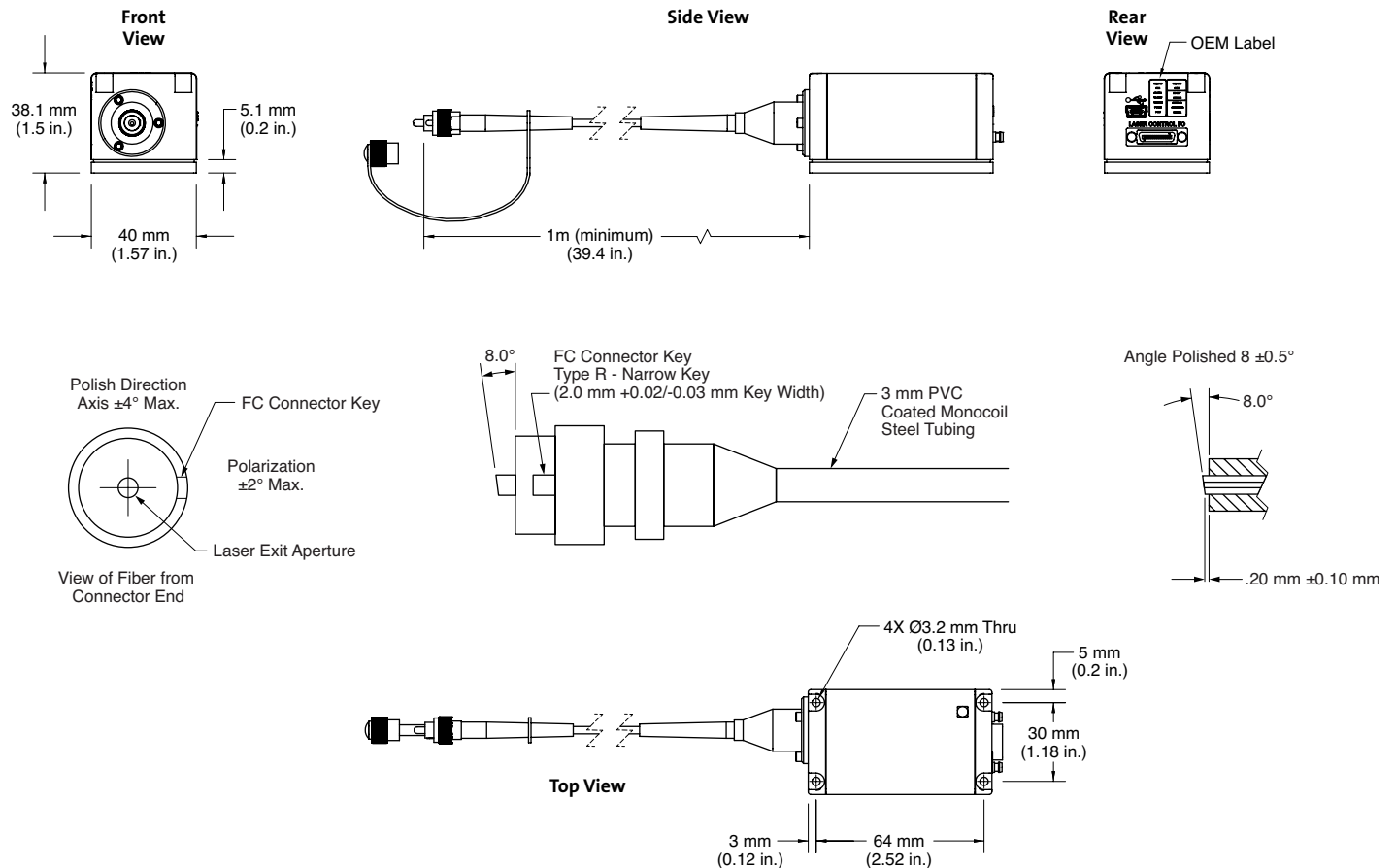
### Utility and Environmental Requirements

Operating Voltage <sup>1</sup> (VDC)	12 ±2
Dimensions (L x W x H)	
Laser	70 x 40 x 38 mm (2.75 x 1.57 x 1.5 in.)
OBIS Remote (optional)	105 x 68 x 36 mm (4.13 x 2.68 x 1.42 in.)
DC Power Supply (optional)	105 x 42 x 33 mm (4.13 x 1.65 x 1.3 in.)
Cable, Laser to OBIS Remote (optional)	1 m (3.28 ft.) (3 meter and 0.3 meter sold separately)
Fiber Minimum Bend Radius	51 mm (2.0 in.)
Weights	
Laser	0.23 kg (0.5 lbs.)
OBIS Remote (optional)	0.23 kg (0.5 lbs.)
DC Power Supply (optional)	0.36 kg (0.79 lbs.)
Cable, Laser to OBIS Remote (optional)	0.1 kg (0.22 lbs.) for 1 meter
Fiber Tensile Load (max.)	1 kg (2.2 lbs.)

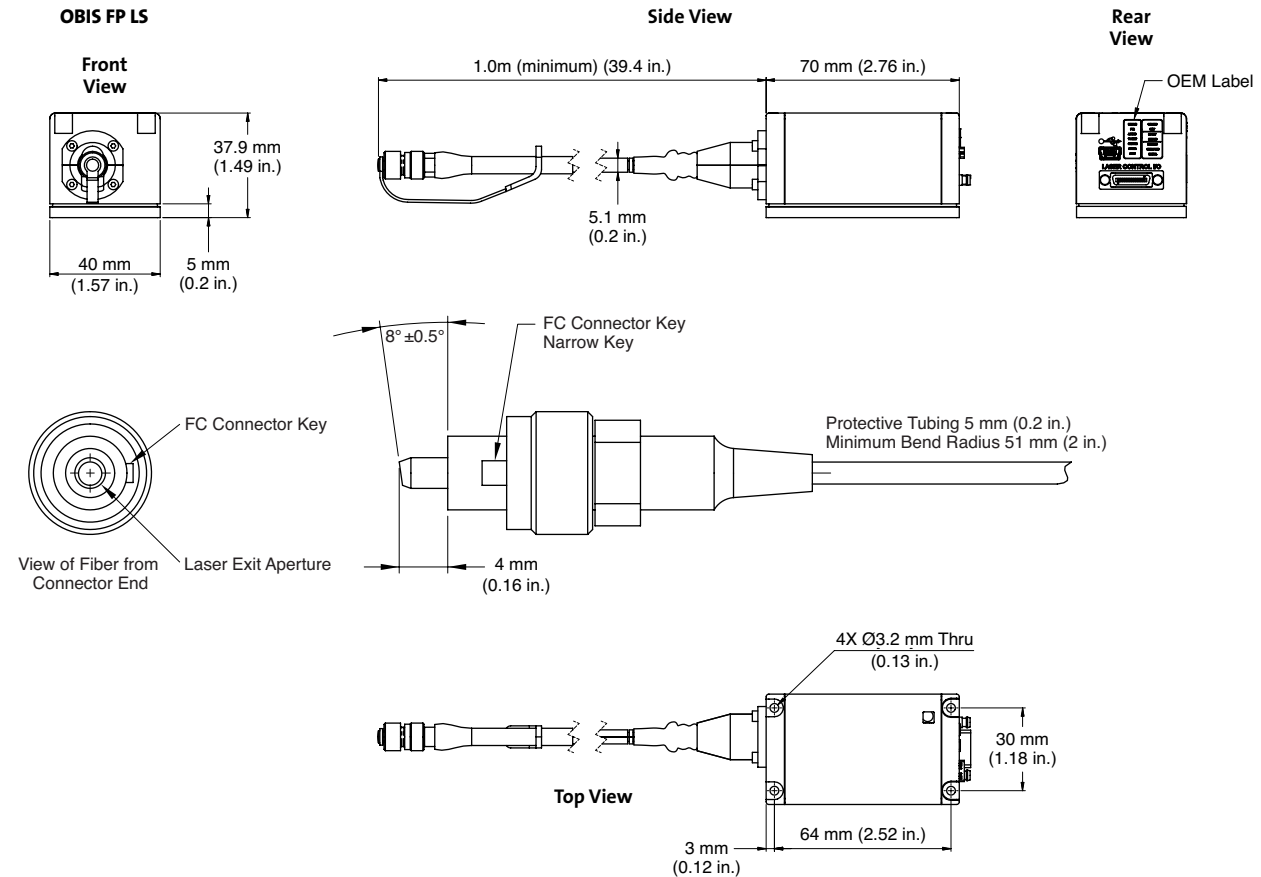
<sup>1</sup> If user supplied, the DC power supply has to meet the following requirements: power >20W; ripple <5% peak-to-peak; line regulation <0.5%.

### Mechanical Specifications

#### OBIS FP LX



### Mechanical Specifications



**Looking for OBIS Galaxy Lasers? Please refer to the OBIS Galaxy data sheet and/or web page.**

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all OBIS Lasers. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.



**CE** ISO 9001 Registered

# OBIS Galaxy

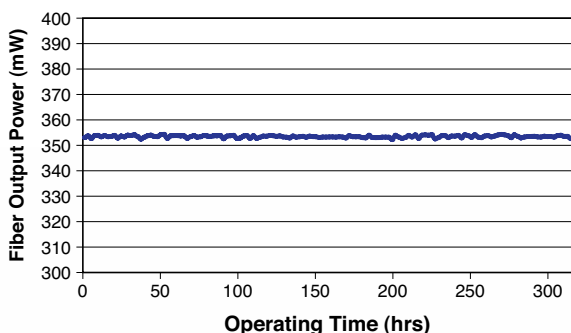
Fiber Input, Fiber Output, Eight Channel Beam Combiner

OBIS Galaxy is a revolutionary design in laser technology, offering plug-and-play capabilities in laser beam combining.

The OBIS Galaxy is equipped with eight FC fiber inputs, and can easily accept any laser using a plug-and-play integration. Each input is optimized to accept the fiber with a FC connection, and Coherent's patented beam combining technology integrates all eight inputs.

The OBIS Galaxy provides a fiber output of the combined eight lasers in a single-mode polarization-maintaining fiber, 2 meters in length, with a FC connector for any customer application.

The OBIS Galaxy matches Coherent's rigorous standards and advanced stress-testing benchmarks, offering the ease of plug-and-play integration and robustness, and providing superior performance and reliability.



Example of the superior performance over time of an OBIS Galaxy output power with 6 lasers inputs (405 nm, 445 nm, 488 nm, 532 nm, 561 nm, 640 nm), totaling 510 mW input power and 353 mW output power (average 69% throughput efficiency)



## OBIS Galaxy Features:

- Plug-and-play eight input, single output beam combiner
- Compact and low profile
- High transmission beam combiner with typical 60% throughput per channel

## OBIS Galaxy Applications:

- Optogenetics
- Endoscopy
- Microscopy
- Cytometry
- Genomics

[www.Coherent.com/OBISGalaxy](http://www.Coherent.com/OBISGalaxy)

**System Specifications<sup>1</sup>**
**OBIS Galaxy**

Eight Input Fiber Connections <sup>2</sup> (nm)	405 445 or 458 488 514 532 552 or 561 590 640
Power Throughput <sup>3</sup> (%) (when used with Coherent Galaxy Compatible Lasers) for 405 nm to 590 nm for 640 nm	>45, Typical >60 >55, Typical >70
Maximum Power Per Channel (mW)	100
Maximum Total Output Power (mW)	<500
RMS Noise (%) (20 Hz to 2 MHz)	<0.5
Peak-to-Peak Noise (%) (20 Hz to 20 kHz)	<2
Fiber Connector Type (Input Connectors)	FC form-factor, ultra-flat contact FC/UFC with extended-life interface, anti-reflection (AR) coated tip
Polarization Extinction Ratio Loss (%)	<50
Long-term Power Throughput (%) (8 hours, $\pm 3^{\circ}\text{C}$ )	>95
Long-term Power Throughput (average) (%)	$\leq 2/1000$ hours

**Output Fiber<sup>4</sup>**

Fiber Connector Type <sup>5,6</sup> (distal end)	FC/APC, 8° angled, with extended-life interface
Fiber Cable Type	3 mm mono-coil
Fiber Cable Length (m) (minimum)	2
Fiber Numerical Aperture (NA) (1/e <sup>2</sup> )	0.055
Fiber Core Diameter ( $\mu\text{m}$ ) (typical)	3.8
Spatial Mode	TEM <sub>00</sub>
M <sup>2</sup> (Beam Quality) <sup>7</sup>	$\leq 1.1$
Fiber Minimum Bend Radius	51 mm (2.0 in.)
Fiber Tensile Load (maximum)	1 kg (2.2 lbs.)
Fiber Connector Type <sup>6</sup> (to OBIS Galaxy)	FC form-factor, ultra-flat contact FC/UFC with extended-life interface

**Utility and Environmental Requirements**

Dimensions	229 x 170 x 29 mm (9.0 x 6.7 x 1.1 in.)
Weight	1.4 kg (3 lbs.)
Shock Tolerance <sup>8</sup> (g) (11 ms)	30
Vibration <sup>7</sup> (g-RMS) (20 Hz to 2 kHz)	7.7
Ambient Temperature <sup>9</sup>	
Operating Temperature	10 to 50°C (50 to 122°F)
Storage Temperature	-20 to 60°C (-4 to 140°F)
Laser Safety Classification <sup>10</sup>	Not Applicable

<sup>1</sup> System specifications measured at 25°C.

<sup>2</sup> All input channels require a  $\pm 1$  nm center wavelength tolerance. Required wavelength tolerances specifically: 405 nm with 404 nm to 406 nm, 445 nm with 444 nm to 446 nm, 458 nm with 457 nm to 459 nm, 488 nm with 487 nm to 489 nm, 514 nm with 513 nm to 515 nm, 532 nm with 531 nm to 533 nm, 552 nm with 551.5 nm to 553.5 nm, 561 nm with 560.5 nm to 562.5 nm, 590 nm with 587 nm to 589 nm, 640 nm with 641 nm to 643 nm.

<sup>3</sup> The Galaxy Beam Combiner as tested and certified will be >60% power transmission per wavelength as measured with production tooling fixtures.

<sup>4</sup> The Output Fiber may be used in reverse as an input channel to air-launch a laser into the FC/APC connector.

<sup>5</sup> Fiber FC/APC connector output not compatible for patchcord-to-patchcord connection.

<sup>6</sup> Recommend changing Connector Type to Fiber Connector Type such to match the description used in System Specifications section.

<sup>7</sup> M<sup>2</sup> measured with ModeMaster with 90/10 Clip Levels.

<sup>8</sup> Non-Operational with a before/after change of <10%.

<sup>9</sup> Non-Condensing, Not hermetically sealed.

<sup>10</sup> OBIS Galaxy is not a laser and therefore the Laser Safety Classification is determined by the end-user and application. Refer to CDRH 21 CFR 1040 subchapter J or IEC 60825-1.

### Accessories

### OBIS Galaxy

Output Fiber<sup>1,2</sup> (FC/UFC to FC/APC)

Part # 1254255

### Part Numbers

Beam Combiner, Eight Input FC/UFC, Single Output FC/APC, 405, 445, 488, 514, 532, 552, 590, 640 nm

Part # 1253553

Beam Combiner, Eight Input FC/UFC, Single Output FC/APC, 405, 458, 488, 514, 532, 552, 590, 640 nm

Part # 1253554

Beam Combiner, Eight Input FC/UFC, Single Output FC/APC, 405, 445, 488, 514, 532, 561, 590, 640 nm

Part # 1253555

Beam Combiner, Eight Input FC/UFC, Single Output FC/APC, 405, 458, 488, 514, 532, 561, 590, 640 nm

Part # 1253556

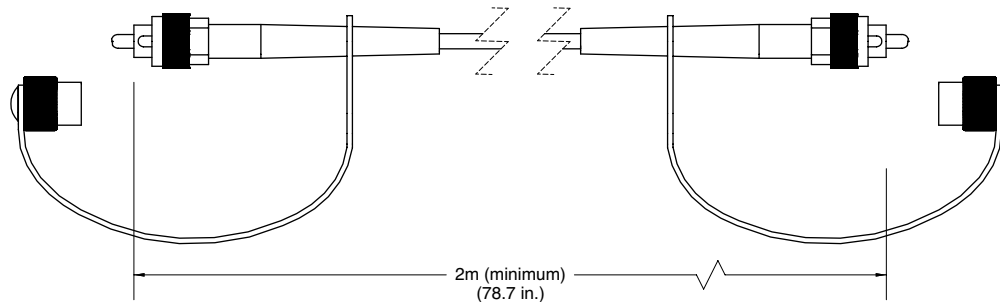
<sup>1</sup> Fiber Output Connector not compatible for patchcord-to-patchcord connection.

<sup>2</sup> One Output Fiber included with each Galaxy Beam Combiner. The Output Fiber is installed at the factory.

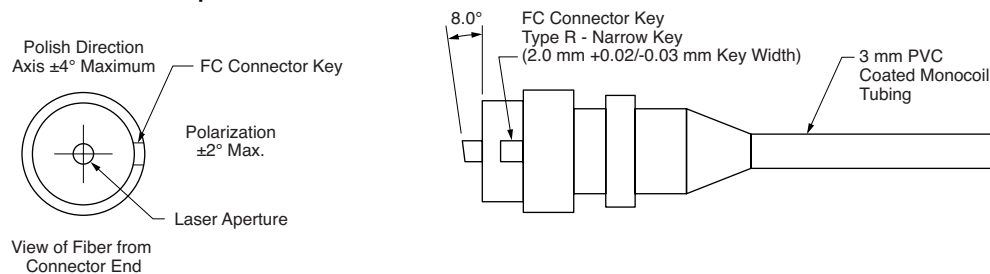
### Mechanical Specifications

#### for the Output Fiber (one included)

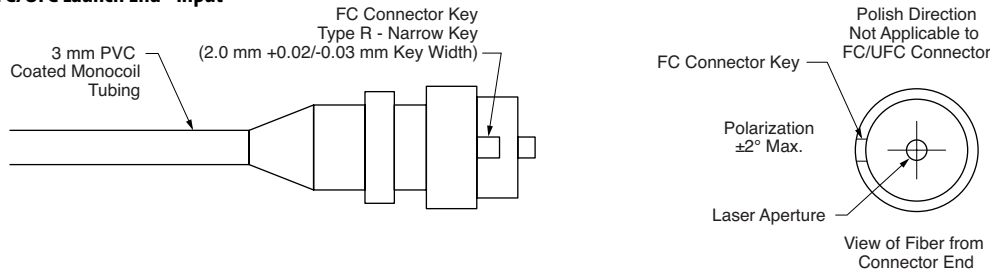
#### Side View



#### FC/APC Distal End - Output



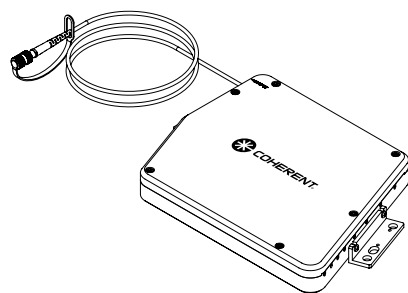
#### FC/UFC Launch End - Input



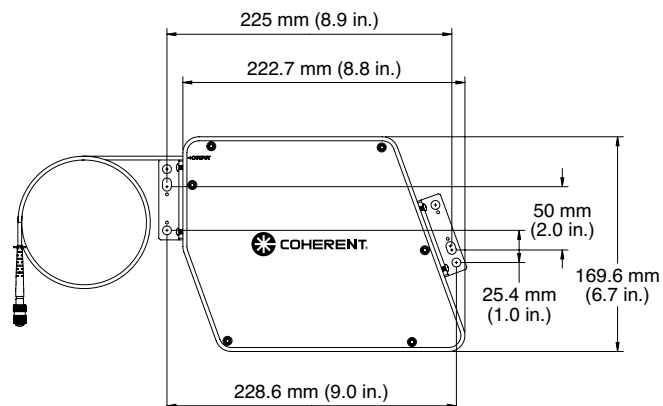


## Mechanical Specifications

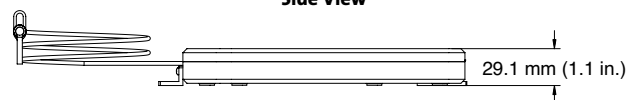
### OBIS Galaxy



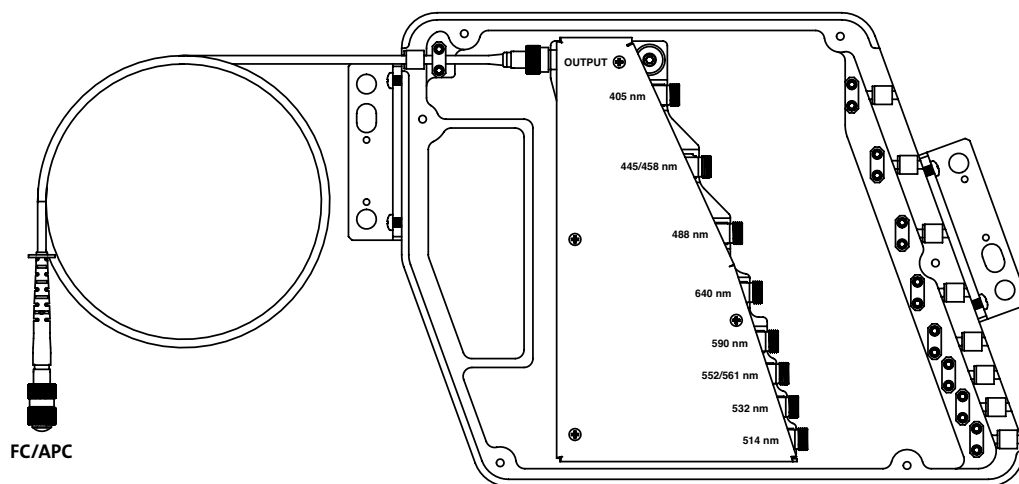
Top View



Side View



Interior View<sup>1</sup>



<sup>1</sup> All nine internal connections are FC/UFC.

## OBIS Galaxy

Fiber Input, Fiber Output, Eight Channel Beam Combiner

### Lasers for OBIS Galaxy

All lasers same as standard product except FC connector changed to UFC type.

#### OBIS FP LX Lasers for OBIS Galaxy

	Part Number
OBIS 405 nm LX 50 mW Laser: Fiber Pigtail:UFC, Galaxy	1236438
OBIS 405 nm LX 100 mW Laser: Fiber Pigtail:UFC, Galaxy	1236439
OBIS 445 nm LX 45 mW Laser: Fiber Pigtail:UFC, Galaxy	1236441
OBIS 458 nm LX 45 mW Laser: Fiber Pigtail:UFC, Galaxy	1236442
OBIS 488 nm LX 30 mW Laser: Fiber Pigtail:UFC, Galaxy	1236443
OBIS 488 nm LX 100 mW Laser: Fiber Pigtail:UFC, Galaxy	1236444
OBIS 514 nm LX 30 mW Laser: Fiber Pigtail: UFC, Galaxy	1253198
OBIS 640 nm LX 75 mW Laser: Fiber Pigtail:UFC, Galaxy	1236445

#### OBIS FP LS Lasers for OBIS Galaxy

OBIS 532 nm LS 80 mW Laser: Fiber Pigtail: UFC, Galaxy	1276599
OBIS 552 nm LS 80 mW Laser: Fiber Pigtail: UFC, Galaxy	1275619
OBIS 561 nm LS 80 mW Laser: Fiber Pigtail: UFC, Galaxy	1275608

#### Sapphire FP Lasers for OBIS Galaxy

Sapphire 514-FP UFC OEM Laser System, 120 mW, Galaxy	1276125
Sapphire 532-FP UFC OEM Laser System, 120 mW, Galaxy	1276167
Sapphire 552-FP UFC OEM Laser System, 120 mW, Galaxy	1276186
Sapphire 561-FP UFC OEM Laser System, 120 mW, Galaxy	1276187
Sapphire 588-FP UFC OEM Laser System, 40 mW, Galaxy	1276188

OBIS FP LX Laser



OBIS FP LS Laser



Sapphire FP Laser



Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all OBIS Galaxy Beam Combiners. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.

# OBIS LG

## True CW, UV and Visible Lasers

Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology powers the OBIS LG, featuring variable output powers without changing the beam parameters.

The OPSL-based OBIS LG provides plug-and-play flexibility, which allows customers to integrate the product of their choice much faster, thereby reducing their time-to-market costs. These true CW lasers deliver up to 50 mW in UV and 3W in the Visible, making them ideal for applications like Flow Cytometry, Particle Counting and Microscopy.

This, combined with a diffraction limited beam, low noise and high stability, provides unparalleled laser performance in the smallest package.

The OBIS LG is the perfect laser platform for customers requiring high performing CW laser technology for research and instrumentation in life sciences and biological applications.



**Superior Reliability & Performance**

### OBIS LG Features:

- **Power invariant beam quality**
- **OBIS USB interface compatibility**
- **Integrated control electronics**

### OBIS LG Applications:

- **Flow Cytometry**
- **Particle Counting**
- **DNA Sequencing**
- **Microscopy**

**System Specifications<sup>1</sup>**

	OBIS LG 355-20	OBIS LG 355-50	OBIS LG 532-3000
Wavelength (nm)	355 ±2	355 ±2	532 ±3
FWHM Linewidth (GHz)		<50	
Pulse Format		CW	
Spectral Purity (%)		>99	
Output Power (mW)	>20	>50	>3000
Spatial Mode		TEM <sub>00</sub>	
Beam Quality (M <sup>2</sup> )		<1.2	
Beam Circularity <sup>2</sup>		1.0 ± 0.15	
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )		<1.2	
Beam Waist Location <sup>3</sup> (mm)		±325	
Beam Pointing Stability (μrad/°C)		<10	
Polarization Ratio		Linear, >100:1	
Polarization Direction		Vertical, ±5°	
Noise (% RMS)(10 Hz to 1 MHz)		<0.25	
Power Stability (%)(pk-pk)		±1	
CDRH Compliant <sup>4</sup>		No	

**Electrical Specifications**

Operating Voltage (VDC)	24 ±10%
Power Consumption (W)	<150

**Environmental Conditions**

Ambient Temperature	
Operating	10 to 40°C (50 to 104°F)
Non-Operating	-10 to 60°C (-14 to 160°F)
Relative Humidity <sup>5</sup> (%)	5 to 95
CE Marking	EN 61010/EN 60825/EN 61326 EN 55011/EN 55058
Dimensions (L x W x H)	
Laser Head <sup>6</sup>	125.0 x 70.0 x 36.2 mm (4.9 x 2.76 x 1.43 in.)
Power Supply <sup>7</sup>	
Cables (laser head to power supply <sup>7</sup> )	2m (6.5 ft.)

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>3</sup> Negative value corresponds to a location inside the laser head.

<sup>4</sup> Ready to be integrated in compliant system.

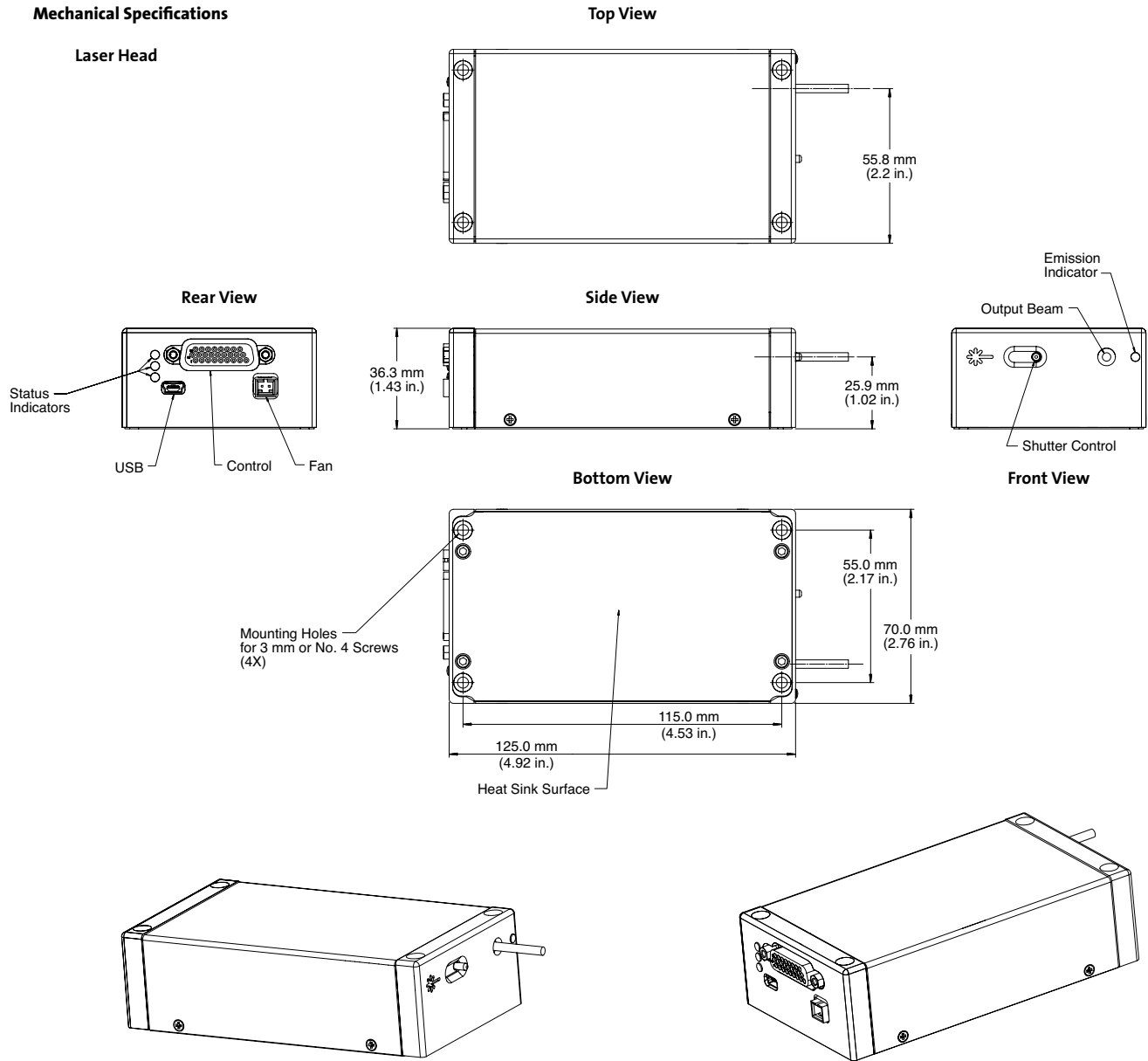
<sup>5</sup> Non-condensing.

<sup>6</sup> Back connector not included in laser head length dimension.

<sup>7</sup> Power supply not included.

## Mechanical Specifications

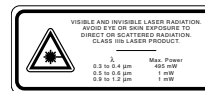
### Laser Head



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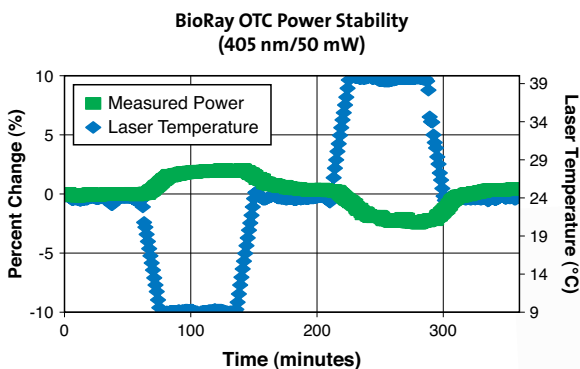
# BioRay

## Elliptical Dot Laser

The Coherent BioRay suite of products offers superior technology in bioinstrumentation lasers for applications such as DNA research, new drug development, fluid evaluation, and biological maintenance activities. Coherent laser technology delivers unparalleled performance and reliability for a wide range of emerging applications that require a cost-effective laser source in bioinstrumentation.

The BioRay provides the user with features aimed at provide the user with options for easy integration via flexible electrical including RS-232 and Analog power control, Coherent standard software interface, and focusable optics that provide direct control over the beam properties.

- Self-contained power supply and drive electronics
- On-board modulation, communications and self-monitoring
- Closed loop independent power feedback
- Low wavelength drift, down to 0.05 nm/°C at 488
- High power stability across operating temperature range



### BioRay Features:

- External focusability
- OBIS RS-232 interface compatibility
- Analog modulation

### BioRay Applications:

- Genetic Sequencing
- PCR
- High Throughput Drug Screening
- Hematology
- Medical Diagnostics
- Micro Array Scanners
- Flow Cytometry

[www.Coherent.com/BioRay](http://www.Coherent.com/BioRay)

**Superior Reliability & Performance**



**System Specifications**

	BioRay-405	BioRay-450	BioRay-488	BioRay-520	BioRay-640
Wavelength <sup>1</sup> (nm)	405	450	488	520	640
Wavelength Tolerance (±nm)	±3	±5	±2	±5	±3
Wavelength Drift (nm/°C)	0.06	0.06	0.03	0.06	0.20
Output Power (mW - Max. <sup>2</sup> )	50	50	20	50	40
Spatial Mode	TEM <sub>00</sub>				
M <sup>2</sup> (Beam Quality)(Average x,y <sup>3</sup> )	<1.5				
Beam Size <sup>4</sup> (x, y)	2.3 x 1.2	2.4 x 0.8	2.5 x 1.2	2.6 x 1.1	2.6 x 1.4
Beam Divergence <sup>4</sup> (mrad)(x, y)	0.5 x 0.5	0.4 x 0.8	0.4 x 0.6	0.4 x 0.7	0.4 x 0.7
Pointing Stability Over Temp. (μrad/°C)	<10				
RMS Noise (%) (20 Hz to 20 MHz)	<0.5				
Peak-to-Peak Noise (%) (20 Hz to 20 MHz)	<1				
Long-term Power Stability (%) (8 hrs., ±3°C)	<2				
Warm-up Time (minutes)(from Cold Start)	<15				
Laser Drive Modes	Analog				
Analog Modulation					
Maximum Bandwidth (KHz)	500 (Constant Power)				
Rise Time (10% to 90%)(nsec)	<500				
Fall Time (90% to 10%)(nsec)	<500				
Modulation Depth (%)	100				
Linear Range (VDC)	0.5 to 5.0 to 4.5				
Static Beam Alignment <sup>5</sup> (degrees)	±5				
Operating Voltage (VDC)	5 to 24				
Operating Current (mA)-(Max. at 25°C)	100	160	85	200	160
Connector <sup>6</sup>	Hirose HR-10P-12S				
Slow Start Delay <sup>7</sup> (μsec.)	5				
Input Impedance (kOhm)	1.5				
Beam Angle (mrad)	<3				
ESD Protection	Level 4				
Heat Dissipation of Laser Head (W)(Max.)	5				
Ambient Temperature					
Operating Condition (°C)	15 to 40				
Non-operating Condition (°C)	-20 to 60				
Shock Tolerance (g)(6 ms)	30				

**Mechanical Specifications**

Weight (g)	<70
Length (mm)	95
Diameter (mm)	19.05
Material	Black anodized AL 6061 T1

<sup>1</sup> Center Wavelength at 25°C.

<sup>2</sup> Delivered power.

<sup>3</sup> X = Fast Axis, Y = Slow Axis.

<sup>4</sup> Typical value.

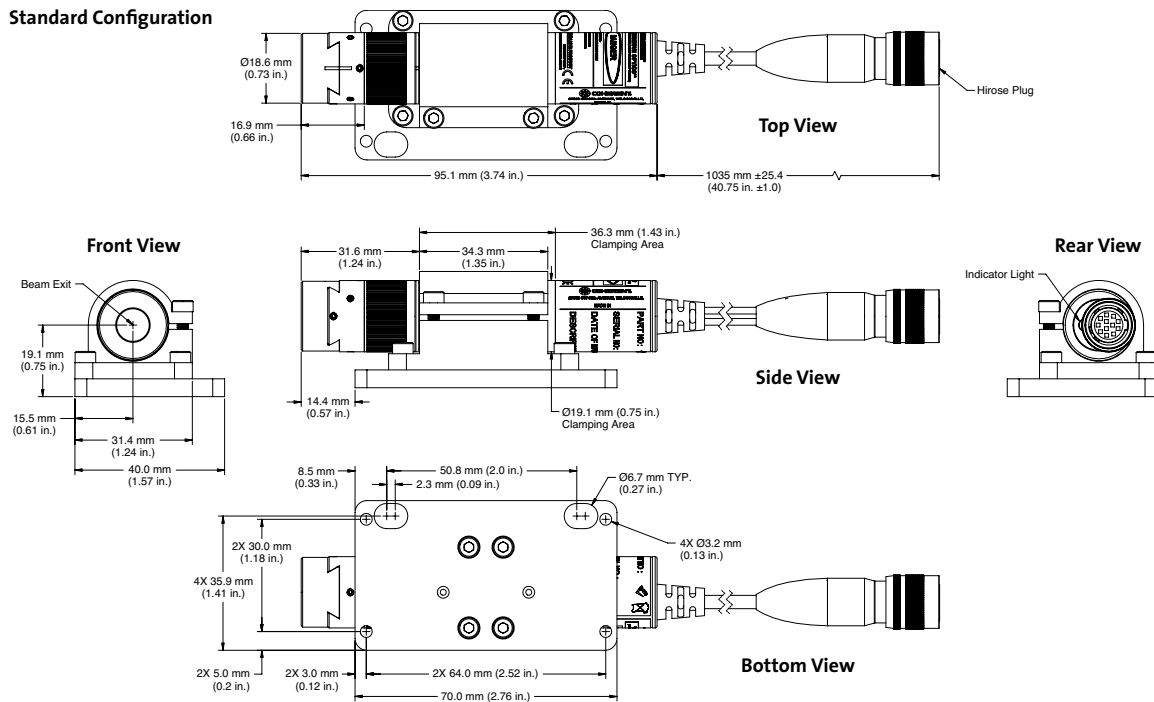
<sup>5</sup> Slow axis aligned to the base plate.

<sup>6</sup> Flying lead for OEM configuration.

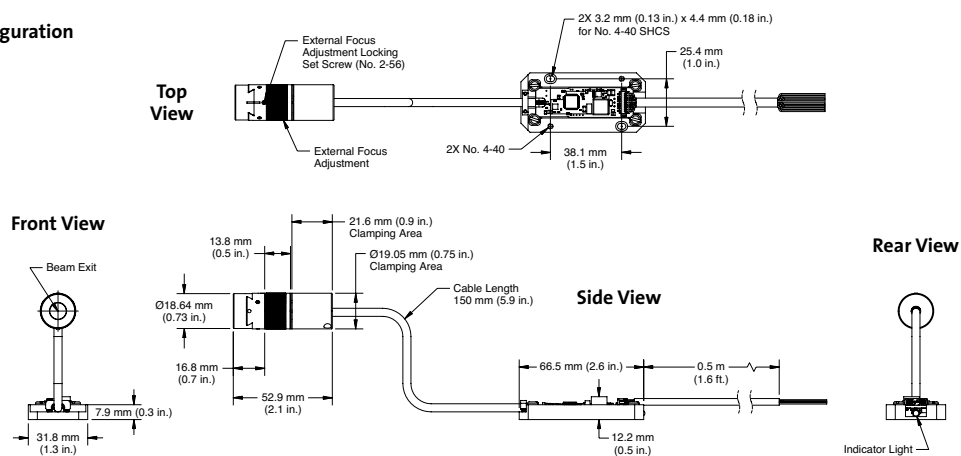
<sup>7</sup> If enabled.

## Mechanical Specifications

### Standard Configuration



### OEM Configuration



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Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

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**CE** ISO 9001 Registered

# BioRay FR

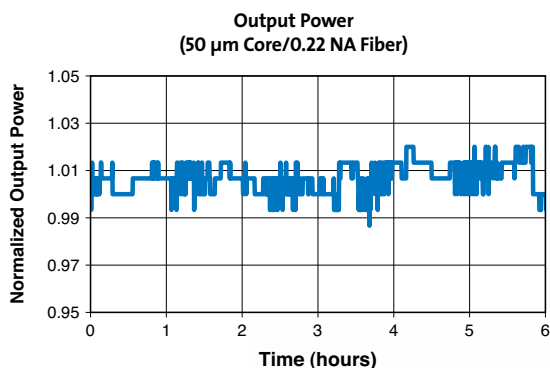
## Multimode Fiber-Ready Laser

The Coherent BioRay suite of products offers superior technology in bioinstrumentation lasers for new applications like DNA research, new drug development, fluid evaluation, and biological maintenance activities. Coherent laser technology delivers unparalleled performance and reliability for a wide range of emerging applications that require a cost-effective laser source in bioinstrumentation.

The Coherent BioRay Fiber-Ready (FR) provides the user with features aimed at provide the user with options for easy integration via flexible electrical including RS-232 and Analog power control, Coherent standard software interface and focusable optics that provide direct control over the beam properties.

The Coherent BioRay FR suite of products is a stable, cost-effective line of diode lasers that include the following:

- Pre-aligned SMA 905 mm fiber adapter
- Self-contained power supply and drive electronics
- On-board modulation, communications and self-monitoring
- Closed-loop independent power feedback
- Low wavelength drift, down to 0.05 nm/°C at 488
- High-coupling efficacy across operating temperature range



### BioRay FR Features:

- **All BioRay advantages with fiber connector**
- **Compatible with customer-provided multimode fibers**

### BioRay FR Applications:

- **Genetic Sequencing**
- **PCR**
- **High Throughput Drug Screening**
- **Hematology**
- **Medical Diagnostics**
- **Micro Array Scanners**
- **Flow Cytometry**

### System Specifications

	BioRay FR-405	BioRay FR-450	BioRay FR-488	BioRay FR-520	BioRay FR-640
Wavelength <sup>1</sup> (nm)	405	450	488	520	640
Wavelength Tolerance (±nm)	±3	±5	±2	±5	±3
Wavelength Drift (nm/°C)	0.06	0.06	0.03	0.06	0.20
Spatial Mode	TEM <sub>00</sub>				
Fiber Connector	SMA 905				
RMS Noise (%) (20 Hz to 20 MHz)	<0.5				
Peak-to-Peak Noise (%) (20 Hz to 20 MHz)	<1				
Long-term Power Stability (%) (8 hrs., ±3°C)	<2				
Warm-up Time (minutes) (from Cold Start)	<15				
Laser Drive Modes	Analog				
Analog Modulation					
Maximum Bandwidth (KHz)	500 (Constant Power)				
Rise Time (10% to 90%) (nsec)	<500				
Fall Time (90% to 10%) (nsec)	<500				
Modulation Depth (%)	100				
Linear Range (VDC)	0.5 to 5.0 to 4.5				
Operating Voltage (VDC)	5 to 24				
Operating Current (mA) (Max. at 25°C)	100	160	85	200	160
Laser Connector <sup>2</sup>	Hirose HR-10P-12S				
Slow Start Delay <sup>3</sup> (µsec.)	5				
Input Impedance (kOhm)	1.5				
ESD Protection	Level 4				
Heat Dissipation of Laser Head (W) (Max.)	5				
Ambient Temperature					
Operating Condition (°C)	15 to 40				
Non-operating Condition (°C)	-20 to 60				
Shock Tolerance (g) (6 ms)	30				

### Mechanical Specifications

Weight (g)	<80				
Foot Print (L x W x H)	95 x 40 x 26 mm (3.7 x 1.6 x 1.0 in.)				
Material	Black anodized AL 6061 T1				

<sup>1</sup> Center Wavelength at 25°C.

<sup>2</sup> Flying lead for OEM configuration.

<sup>3</sup> If enabled.

### Coupling Efficiencies<sup>1</sup>

Typical coupling efficiencies that can be obtained with a step index core fiber, 0.22 NA, SMA/SMA, 1 meter (Coherent part number 1278782):

$$CE (\%) = \frac{P_{\text{fiber}}}{P_{\text{laser}}} \times 100$$

	BioRay FR-405	BioRay FR-450	BioRay FR-488	BioRay FR-520	BioRay FR-640
Wavelength (nm)	405	450	488	520	640
Output Power (mW)	50	50	20	50	40
Typical Output Power <sup>2</sup> (ex-fiber, mW)	35	35	15	35	30
Coupling Efficiencies (%)	72 to 75	72 to 75	75 to 78	77 to 80	80 to 83
Numerical Aperture <sup>3</sup> (NA) (1/e <sup>2</sup> )	0.22				
Minimum Core Diameter (µm)	50				

<sup>1</sup> These coupling efficiencies are not guaranteed and should only be used as guidelines.

<sup>2</sup> Delivered power.

<sup>3</sup> Typical value.

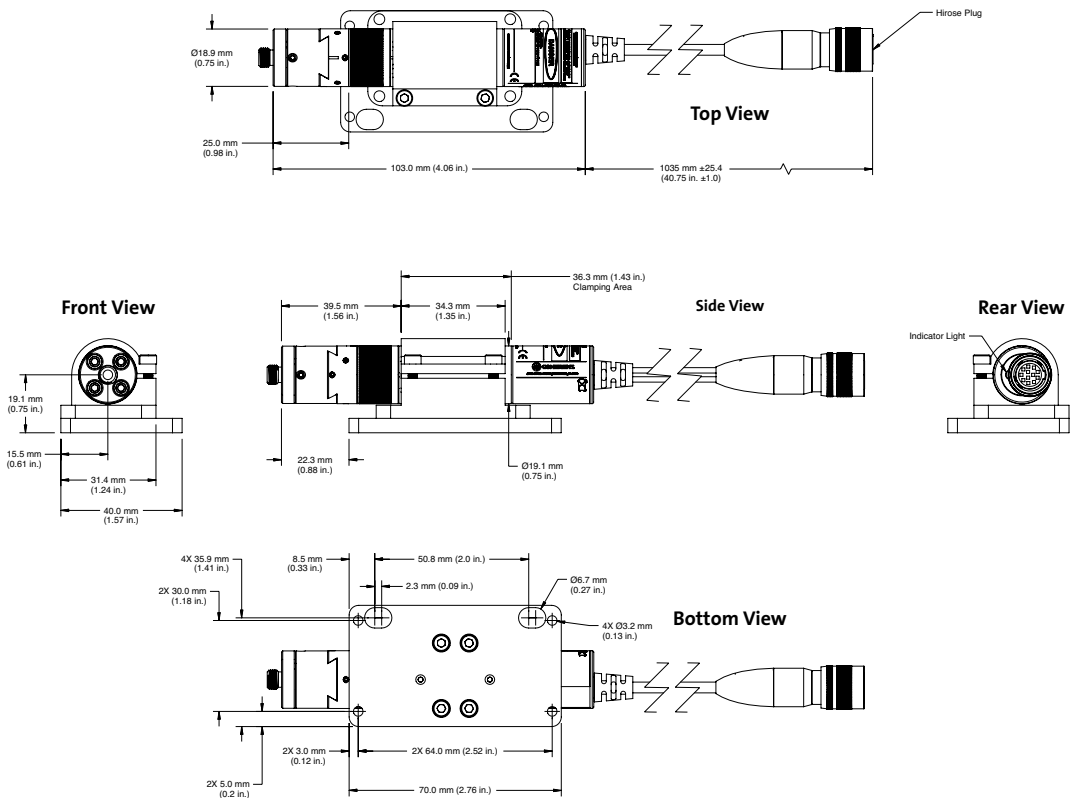
# BioRay FR

## Multimode Fiber-Ready Laser

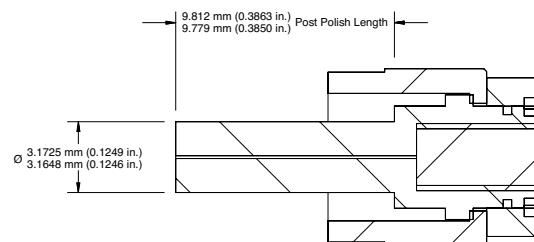


### Mechanical Specifications

#### BioRay FR



#### BioRay FR SMA 905 Connector



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CE ISO 9001 Registered

# Sapphire LP

CW Visible Lasers from Deep Blue to Orange

The Coherent Sapphire LP is a series of compact CW visible lasers based on Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology. OPSL technology delivers established legacy wavelengths of ion and diode-pumped solid-state lasers, and its scalability allows for customized wavelengths to be developed and tailored to a specific application.

The Sapphire LP lasers are manufactured in clean rooms using Coherent's patented PermAlign technology to deliver optimal aligning and solder bonding of the optics. This patented technology results in an industry-best beam quality and power stability as well as the lowest noise over the complete lifetime of the laser.

The Sapphire LP lasers are provisioned with flexible interfaces including Analog, RS-232, and USB, offering a choice of communication channels for every customer's specific requirement.

The Sapphire LP lasers deliver consistent superior performance, proven reliability, and low cost of ownership; making it the ideal laser solution for a variety of applications including life sciences, environmental protection, semiconductor inspection, and metrology.

## Sapphire LP Features:

- Power invariant beam quality
- Output power up to 300 mW
- Industry-standard Sapphire footprint

## Sapphire LP Applications:

- Flow Cytometry
- Confocal Microscopy
- Genomics & Proteomics
- High Throughput Drug Screening
- Medical Diagnostics
- Micro Array Scanning
- Semiconductor Inspection
- Metrology



[www.Coherent.com/SapphireLP](http://www.Coherent.com/SapphireLP)

**Superior Reliability & Performance**



### System Specifications

	Sapphire 458 LP	Sapphire 488 LP
Wavelength <sup>1</sup> (nm)	458 ±2	488 ±2
Output Power <sup>2</sup> (mW)	20, 50, 75	10, 20, 25, 30, 40, 50, 75, 100, 150, 200, 300
Spatial Mode	TEM <sub>00</sub> , M <sup>2</sup> <1.1	
Beam Asymmetry	0.9 to 1.1	
Beam Diameter at 1/e <sup>2</sup>	0.70 ±0.05 mm	
Beam Divergence (mrad)	<1.2	
Pointing Stability (over 2 hours after warm-up and ±3°C)(μrad)	<30	
Noise (%)		
20 Hz to 2 MHz, rms	<0.25	
20 Hz to 20 kHz, peak-to-peak	<1	
Long-term Power Stability (%) (2 hours, ±3°C)	<2	
Warm-up Time (minutes)	<5	
Polarization Ratio	>100:1, vertical	
Static Alignment Tolerances <sup>3</sup>		
Beam Position (mm)	±0.25	
Beam Angle (mrad)	±2.5	
Beam Waist Position with respect to Exit Window	±200 <sup>4</sup>	

### Utility and Environmental Requirements

Operating Voltage <sup>5</sup> (VDC)	+10.8 to 15	
Power Consumption (W)	<60	
Max. Laser Head Baseplate Temp. <sup>6</sup>	+50°C (122°F)	+55°C (131°F), +50°C (122°F) <sup>7</sup>
Max. Heat Dissipation of Head (W)	25 (baseplate at 50°C)	25 (baseplate at 55°C/50°C) <sup>7</sup>
Ambient Temperature		
Operating Conditions	10 to 40°C (50 to 104°F) non-condensing	
Non-Operating Condition	-30 to 60°C (-22 to 140°F)	
Shock Tolerance (6 ms)	7g laterally, 15g vertically	
Dimensions (L x W x H)		
Laser Head	125 x 70 x 34 mm (4.9 x 2.8 x 1.3 in.)	
Controller	117.8 x 76.2 x 30 mm (4.6 x 3.0 x 1.2 in.)	
Heat Sink (optional)	200 x 80 x 50 mm (7.9 x 3.2 x 2 in.)	
DC Power Supply (optional)	171 x 104 x 55 mm (6.7 x 4.1 x 2.2 in.)	
Cable — Laser Head to Controller	2m (6.56 ft.), optional 5m (16.4 ft.)	
Weights		
Laser Head	0.35 kg (0.77 lbs.)	
Controller	0.25 kg (0.55 lbs.)	
Heat Sink (optional)	0.75 kg (1.65 lbs.)	
DC Power Supply (optional)	0.95 kg (incl. line cable)(2.1 lbs.)	
Packaged System (head+controller+cable>manual)	1.7 kg (3.7 lbs.)	
Cable — Laser Head to Controller	0.3 kg (0.66 lbs.)	

### Measurement Tools

		Part Number
Meter	FieldMax™II-TO	1098579
Sensor	PS10Q	1098400

<sup>1</sup> Laser-to-laser tolerance. With residual IR emission less than 0.1 mW.

<sup>2</sup> Output power is adjustable via analog or digital interface from 10% to 110%. Specifications are valid for 100% power. Recommended power range is 70 to 110% power.

<sup>3</sup> Static alignment tolerances are relative to the right bottom edge (in beam direction).

<sup>4</sup> 200 mm is ~30% of Raleigh Range at 514/532/561/568 nm; 200 mm is ~25% of Raleigh Range at 458/488 nm.

<sup>5</sup> If user-supplied, the DC power supply has to meet the following requirements: Power >60W; ripple <5% peak-to-peak; line regulation <0.5%.

<sup>6</sup> With factory-provided or other adequate heat sink.

<sup>7</sup> Sapphire 488-10/20/25/30 has a maximum baseplate temperature of +55°C (+131°F). Sapphire 488-40/50/75/100/150/200 and 300 mW models are limited to a maximum baseplate temperature of +50°C (+122°F).

### System Specifications

	Sapphire 514 LP	Sapphire 532 LP	Sapphire 552 LP
Wavelength <sup>1</sup> (nm)	514 ±2	532 ±2	552 ±2
Output Power <sup>2</sup> (mW)	20, 50, 75, 100, 150	20, 50, 75, 100, 150, 200, 300	50, 75, 100, 150, 200
Spatial Mode	TEM <sub>00</sub> , M <sup>2</sup> <1.1		
Beam Asymmetry	0.9 to 1.1		
Beam Diameter at 1/e <sup>2</sup>	0.70 ±0.05 mm		
Beam Divergence (mrad)	<1.3		
Pointing Stability (over 2 hours after warm-up and ±3°C)(μrad)	<30		
Noise (%)			
20 Hz to 2 MHz, rms	<0.25		
20 Hz to 20 kHz, peak-to-peak	<1		
Long-term Power Stability (%) (2 hours, ±3°C)	<2		
Warm-up Time (minutes)	<5		
Polarization Ratio	>100:1, vertical		
Static Alignment Tolerances <sup>3</sup>			
Beam Position (mm)	±0.25		
Beam Angle (mrad)	±2.5		
Beam Waist Position with respect to Exit Window	±200 <sup>4</sup>		

### Utility and Environmental Requirements

Operating Voltage <sup>5</sup> (VDC)	+10.8 to 15
Power Consumption (W)	<60
Max. Laser Head Baseplate Temp. <sup>6</sup>	+50°C (122°F)
Max. Heat Dissipation of Head (W)	25 (baseplate at 50°C)
Ambient Temperature	
Operating Conditions	10 to 40°C (50 to 104°F) non-condensing
Non-Operating Condition	-30 to 60°C (-22 to 140°F)
Shock Tolerance (6 ms)	7g laterally, 15g vertically
Dimensions (L x W x H)	
Laser Head	125 x 70 x 34 mm (4.9 x 2.8 x 1.3 in.)
Controller	117.8 x 76.2 x 30 mm (4.6 x 3.0 x 1.2 in.)
Heat Sink (optional)	200 x 80 x 50 mm (7.9 x 3.2 x 2 in.)
DC Power Supply (optional)	171 x 104 x 55 mm (6.7 x 4.1 x 2.2 in.)
Cable — Laser Head to Controller	2m (6.56 ft.), optional 5m (16.4 ft.)
Weights	
Laser Head	0.35 kg (0.77 lbs.)
Controller	0.25 kg (0.55 lbs.)
Heat Sink (optional)	0.75 kg (1.65 lbs.)
DC Power Supply (optional)	0.95 kg (incl. line cable)(2.1 lbs.)
Packaged System (head+controller+cable>manual)	1.7 kg (3.7 lbs.)
Cable — Laser Head to Controller	0.3 kg (0.66 lbs.)

### Measurement Tools

		Part Number
Meter	FieldMax™II-TO	1098579
Sensor	PS10Q	1098400

<sup>1</sup> Laser-to-laser tolerance. With residual IR emission less than 0.1 mW.

<sup>2</sup> Output power is adjustable via analog or digital interface from 10% to 110%. Specifications are valid for 100% power. Recommended power range is 70 to 110% power.

<sup>3</sup> Static alignment tolerances are relative to the right bottom edge (in beam direction).

<sup>4</sup> 200 mm is ~30% of Raleigh Range at 514/532/561/568 nm; 200 mm is ~25% of Raleigh Range at 458/488 nm.

<sup>5</sup> If user-supplied, the DC power supply has to meet the following requirements: Power >60W; ripple <5% peak-to-peak; line regulation <0.5%.

<sup>6</sup> With factory-provided or other adequate heat sink.

System Specifications	Sapphire 561 LP	Sapphire 568 LP	Sapphire 588 LP	Sapphire 594 LP
Wavelength <sup>1</sup> (nm)	561 ±2	568 ±2	588 ±2	594 ±2
Output Power <sup>2</sup> (mW)	20, 50, 75, 100, 150, 200, 300	50, 75, 100, 150, 200	20, 50, 75, 100	20, 50, 75
Spatial Mode	TEM <sub>00</sub> , M <sup>2</sup> <1.1			
Beam Asymmetry	0.9 to 1.1			
Beam Diameter at 1/e <sup>2</sup>	0.70 ±0.05 mm			
Beam Divergence (mrad)	<1.3			
Pointing Stability (over 2 hours after warm-up and ±3°C)(μrad)	<30			
Noise (%)				
20 Hz to 2 MHz, rms	<0.25			
20 Hz to 20 kHz, peak-to-peak	<1			
Long-term Power Stability (%) (2 hours, ±3°C)	<2			
Warm-up Time (minutes)	<5			
Polarization Ratio	>100:1, vertical			
Static Alignment Tolerances <sup>3</sup>				
Beam Position (mm)	±0.25			
Beam Angle (mrad)	±2.5			
Beam Waist Position with respect to Exit Window	±200 <sup>4</sup>			
Utility and Environmental Requirements				
Operating Voltage <sup>5</sup> (VDC)	+10.8 to 15			
Power Consumption (W)	<60			
Max. Laser Head Baseplate Temp. <sup>6</sup>	+50°C (122°F)			
Max. Heat Dissipation of Head (W)	25 (baseplate at 50°C )			
Ambient Temperature				
Operating Conditions	10 to 40°C (50 to 104°F) non-condensing			
Non-Operating Condition	-30 to 60°C (-22 to 140°F)			
Shock Tolerance (6 ms)	7g laterally, 15g vertically			
Dimensions (L x W x H)				
Laser Head	125 x 70 x 34 mm (4.9 x 2.8 x 1.3 in.)			
Controller	117.8 x 76.2 x 30 mm (4.6 x 3.0 x 1.2 in.)			
Heat Sink (optional)	200 x 80 x 50 mm (7.9 x 3.2 x 2 in.)			
DC Power Supply (optional)	171 x 104 x 55 mm (6.7 x 4.1 x 2.2 in.)			
Cable — Laser Head to Controller	2m (6.56 ft.), optional 5m (16.4 ft.)			
Weights				
Laser Head	0.35 kg (0.77 lbs.)			
Controller	0.25 kg (0.55 lbs.)			
Heat Sink (optional)	0.75 kg (1.65 lbs.)			
DC Power Supply (optional)	0.95 kg (incl. line cable)(2.1 lbs.)			
Packaged System (head+controller+cable>manual)	1.7 kg (3.7 lbs.)			
Cable — Laser Head to Controller	0.3 kg (0.66 lbs.)			

**Measurement Tools**

		Part Number
Meter	FieldMax™II-TO	1098579
Sensor	PS10Q	1098400

<sup>1</sup> Laser-to-laser tolerance. With residual IR emission less than 0.1 mW.

<sup>2</sup> Output power is adjustable via analog or digital interface from 10% to 110%. Specifications are valid for 100% power. Recommended power range is 70 to 110% power.

<sup>3</sup> Static alignment tolerances are relative to the right bottom edge (in beam direction).

<sup>4</sup> 200 mm is ~30% of Raleigh Range at 514/532/561/568 nm; 200 mm is ~25% of Raleigh Range at 458/488 nm.

<sup>5</sup> If user-supplied, the DC power supply has to meet the following requirements: Power >60W; ripple <5% peak-to-peak; line regulation <0.5%.

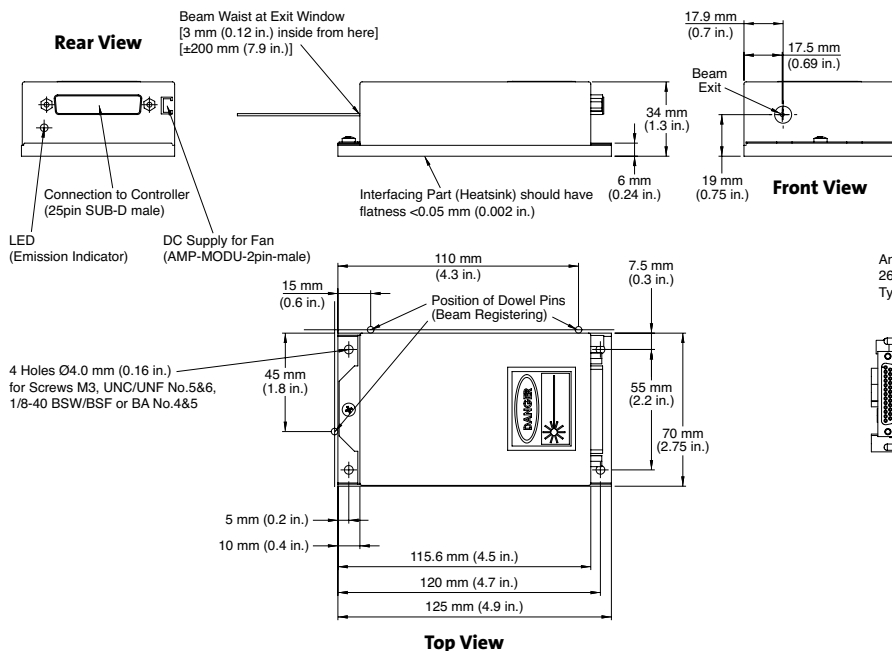
<sup>6</sup> With factory-provided or other adequate heat sink.

# Sapphire LP

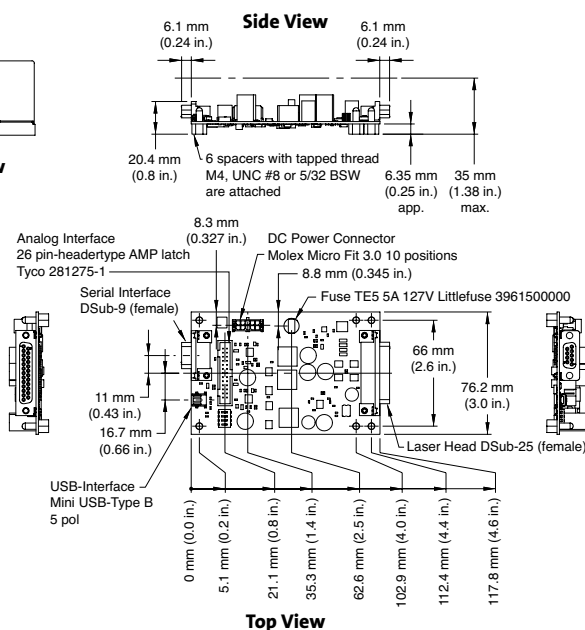
CW Visible Lasers from Deep Blue to Orange

## Mechanical Specifications

### Laser Head



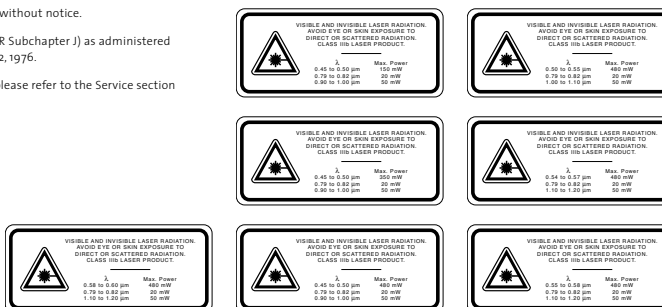
### Controller



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# Sapphire FP

Fiber Pigtailed Lasers from Deep Blue to Orange

The Coherent Sapphire FP is a series of true fiber-pigtailed lasers based on Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology. OPSL technology delivers established legacy wavelengths of ion and diode-pumped solid-state lasers, and its scalability allows for customized wavelengths to be developed and tailored to a specific application.

The Sapphire FP lasers are manufactured in clean rooms using Coherent's patented PermAlign™ technology to deliver optimal aligning and solder bonding of the optics. The fiber is an integral part of the resonator and is completely independent of the outer housing.

Coherent's proprietary fiber design allows operation at short wave-lengths and/or high powers without fiber degradation or damage. As a result, Sapphire FP lasers deliver excellent output stability, lowest noise and superior polarization (PER) over a broad ambient temperature operating range (10°C to 40°C).

The Sapphire FP lasers are provisioned with flexible interfaces including Analog, RS-232, and USB, offering a choice of communication channels for every customer's specific requirement.

The Sapphire FP lasers find wide application in life sciences, metrology, and inspection where fluorescence-based techniques leverage fiber delivery to facilitate miniaturization.



**Superior Reliability & Performance**

## **Sapphire FP Features:**

- All Sapphire advantages with fiber delivery
- Single mode, polarization maintaining fiber
- Extended life fiber design

## **Sapphire FP Applications:**

- Confocal Microscopy
- Flow Cytometry
- Genomics & Proteomics
- High Throughput Drug Screening
- Medical Diagnostics
- Semiconductor Inspection

### System Specifications

	Sapphire 458 FP	Sapphire 488 FP
Wavelength <sup>1</sup> (nm)	458 ±2	488 ±2
Output Power at Fiber Exit <sup>2</sup> (mW)	40	40, 80, 120, 200
Fiber Type	SM-PM <sup>3</sup>	
Fiber Length (m)	1	
Fiber Output	FC/APC; 8° angled <sup>4</sup>	
Spatial Mode	TEM <sub>00</sub> , M <sup>2</sup> <1.1	
Beam Asymmetry	<1:1.1	
Noise (%)		
RMS (20 Hz to 2 MHz)	<0.25	
Peak-to-Peak Noise (20 Hz to 20 kHz)	<1	
Long-term Power Stability (%) (2 hours, ±3°C)	<2	
Warm-up Time (min.)	<5	
Polarization Ratio	>100:1, linear, vertical	

### Utility and Environmental Requirements

Laser Safety Classification	3b
Operating Voltage <sup>5</sup> (VDC)	+10.8 to 15
Power Consumption (W)	<60
Max. Laser Head Baseplate Temperature <sup>6</sup>	50°C/122°F
Max. Heat Dissipation of Laser Head (W)	25 (baseplate at 50°C/122°F)
Ambient Temperature	
Operating Condition	10 to 40°C/50 to 104°F
Non-Operating Condition	-20 to 60°C/-4 to 140°F
Humidity	
Operating Condition	0 to 95%, non-condensing
Non-Operating Condition	0 to 100%, non-condensing
Shock Tolerance (11 ms)	15g laterally, 15g vertically
Dimensions (L x W x H)	
Laser Head <sup>7</sup>	125 x 70 x 34 mm/4.9 x 2.8 x 1.3 in.
Controller	118 x 76 x 30 mm/4.6 x 3.0 x 1.2 in.
Heat Sink (optional)	200 x 80 x 50 mm/7.9 x 3.2 x 2.0 in.
DC Power Supply (optional)	171 x 104 x 55 mm/6.7 x 4.1 x 2.2 in.
Cable Laser Head to Controller	2m/6.56 ft. and options
Weights	
Laser Head <sup>7</sup>	0.35 kg/0.77 lbs.
Controller	0.25 kg/0.55 lbs.
Heat Sink (optional)	0.75 kg/1.65 lbs.
DC Power Supply (optional)	0.95 kg/2.1 lbs. incl. line cable
Cable Laser Head to Controller	0.3 kg/0.66 lbs.

<sup>1</sup> Laser-to-laser tolerance.

<sup>2</sup> Output power is adjustable via analog or digital interface from 10% to 110%. Specifications are valid for 100% power.

<sup>3</sup> Single-mode, polarization maintaining fiber, bending radius min. 50 mm.

<sup>4</sup> Fiber FC/APC connector output not compatible for patchcord-to-patchcord connection.

<sup>5</sup> If user-supplied, the DC power supply has to meet the following requirements: power >60W; ripple <5% peak-to-peak; line regulation <0.5%.

<sup>6</sup> With factory-provided or other adequate heat sink.

<sup>7</sup> Dimensions respectively weight without fiber-pigtail part.

### System Specifications

	Sapphire 514 FP	Sapphire 532 FP	Sapphire 552 FP
Wavelength <sup>1</sup> (nm)	514 ±2	532 ±2	552 ±2
Output Power at Fiber Exit <sup>2</sup> (mW)	40, 80, 120	40, 80, 120	40, 80, 120
Fiber Type	SM-PM <sup>3</sup>		
Fiber Length (m)	1		
Fiber Output	FC/APC; 8° angled <sup>4</sup>		
Spatial Mode	TEM <sub>00</sub> , M <sup>2</sup> <1.1		
Beam Asymmetry	<1:1.1		
Noise (%)			
RMS (20 Hz to 2 MHz)	<0.25		
Peak-to-Peak Noise (20 Hz to 20 kHz)	<1		
Long-term Power Stability (%) (2 hours, ±3°C)	<2		
Warm-up Time (min.)	<5		
Polarization Ratio	>100:1, linear, vertical		

### Utility and Environmental Requirements

Laser Safety Classification	3b
Operating Voltage <sup>5</sup> (VDC)	+10.8 to 15
Power Consumption (W)	<60
Max. Laser Head Baseplate Temperature <sup>6</sup>	50°C/122°F
Max. Heat Dissipation of Laser Head (W)	25 (baseplate at 50°C/122°F)
Ambient Temperature	
Operating Condition	10 to 40°C/50 to 104°F
Non-Operating Condition	-20 to 60°C/-4 to 140°F
Humidity	
Operating Condition	0 to 95%, non-condensing
Non-Operating Condition	0 to 100%, non-condensing
Shock Tolerance (11 ms)	15g laterally, 15g vertically
Dimensions (L x W x H)	
Laser Head <sup>7</sup>	125 x 70 x 34 mm/4.9 x 2.8 x 1.3 in.
Controller	118 x 76 x 30 mm/4.6 x 3.0 x 1.2 in.
Heat Sink (optional)	200 x 80 x 50 mm/7.9 x 3.2 x 2.0 in.
DC Power Supply (optional)	171 x 104 x 55 mm/6.7 x 4.1 x 2.2 in.
Cable Laser Head to Controller	2m/6.56 ft. and options
Weights	
Laser Head <sup>7</sup>	0.35 kg/0.77 lbs.
Controller	0.25 kg/0.55 lbs.
Heat Sink (optional)	0.75 kg/1.65 lbs.
DC Power Supply (optional)	0.95 kg/2.1 lbs. incl. line cable
Cable Laser Head to Controller	0.3 kg/0.66 lbs.

<sup>1</sup> Laser-to-laser tolerance.

<sup>2</sup> Output power is adjustable via analog or digital interface from 10% to 110%. Specifications are valid for 100% power.

<sup>3</sup> Single-mode, polarization maintaining fiber, bending radius min. 50 mm.

<sup>4</sup> Fiber FC/APC connector output not compatible for patchcord-to-patchcord connection.

<sup>5</sup> If user-supplied, the DC power supply has to meet the following requirements: power >60W; ripple <5% peak-to-peak; line regulation <0.5%.

<sup>6</sup> With factory-provided or other adequate heat sink.

<sup>7</sup> Dimensions respectively weight without fiber-pigtail part.



System Specifications	Sapphire 561 FP	Sapphire 588 FP	Sapphire 594 FP
Wavelength <sup>1</sup> (nm)	561 ±2	588 ±2	594 ±2
Output Power at Fiber Exit <sup>2</sup> (mW)	40, 80, 120, 200	40	40
Fiber Type		SM-PM <sup>3</sup>	
Fiber Length (m)		1	
Fiber Output		FC/APC; 8° angled <sup>4</sup>	
Spatial Mode		TEM <sub>00</sub> , M <sup>2</sup> <1.1	
Beam Asymmetry		<1:1.1	
Noise (%)			
RMS (20 Hz to 2 MHz)		<0.25	
Peak-to-Peak Noise (20 Hz to 20 kHz)		<1	
Long-term Power Stability (%) (2 hours, ±3°C)		<2	
Warm-up Time (min.)		<5	
Polarization Ratio		>100:1, linear, vertical	
<b>Utility and Environmental Requirements</b>			
Laser Safety Classification		3b	
Operating Voltage <sup>5</sup> (VDC)		+10.8 to 15	
Power Consumption (W)		<60	
Max. Laser Head Baseplate Temperature <sup>6</sup>		50°C/122°F	
Max. Heat Dissipation of Laser Head (W)		25 (baseplate at 50°C/122°F)	
Ambient Temperature			
Operating Condition		10 to 40°C/50 to 104°F	
Non-Operating Condition		-20 to 60°C/-4 to 140°F	
Humidity			
Operating Condition		0 to 95%, non-condensing	
Non-Operating Condition		0 to 100%, non-condensing	
Shock Tolerance (11 ms)		15g laterally, 15g vertically	
Dimensions (L x W x H)			
Laser Head <sup>7</sup>		125 x 70 x 34 mm/4.9 x 2.8 x 1.3 in.	
Controller		118 x 76 x 30 mm/4.6 x 3.0 x 1.2 in.	
Heat Sink (optional)		200 x 80 x 50 mm/7.9 x 3.2 x 2.0 in.	
DC Power Supply (optional)		171 x 104 x 55 mm/6.7 x 4.1 x 2.2 in.	
Cable Laser Head to Controller		2m/6.56 ft. and options	
Weights			
Laser Head <sup>7</sup>		0.35 kg/0.77 lbs.	
Controller		0.25 kg/0.55 lbs.	
Heat Sink (optional)		0.75 kg/1.65 lbs.	
DC Power Supply (optional)		0.95 kg/2.1 lbs. incl. line cable	
Cable Laser Head to Controller		0.3 kg/0.66 lbs.	

<sup>1</sup> Laser-to-laser tolerance.

<sup>2</sup> Output power is adjustable via analog or digital interface from 10% to 110%. Specifications are valid for 100% power.

<sup>3</sup> Single-mode, polarization maintaining fiber, bending radius min. 50 mm.

<sup>4</sup> Fiber FC/APC connector output not compatible for patchcord-to-patchcord connection.

<sup>5</sup> If user-supplied, the DC power supply has to meet the following requirements: power >60W; ripple <5% peak-to-peak; line regulation <0.5%.

<sup>6</sup> With factory-provided or other adequate heat sink.

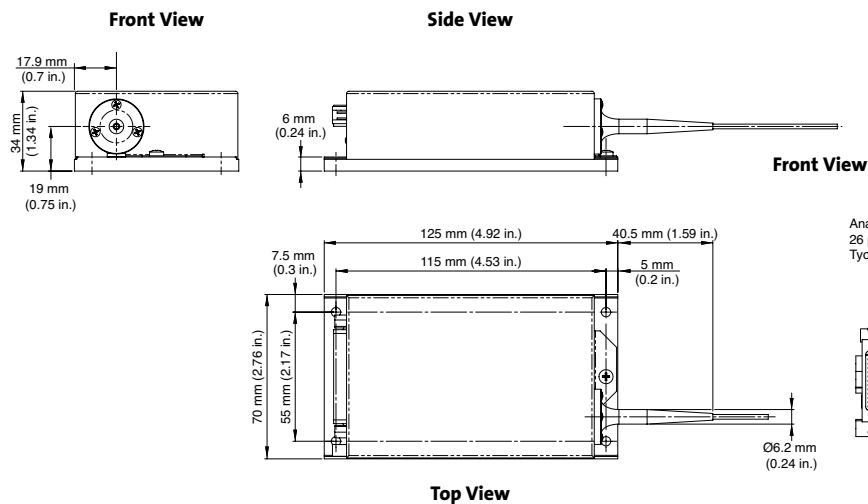
<sup>7</sup> Dimensions respectively weight without fiber-pigtail part.

# Sapphire FP

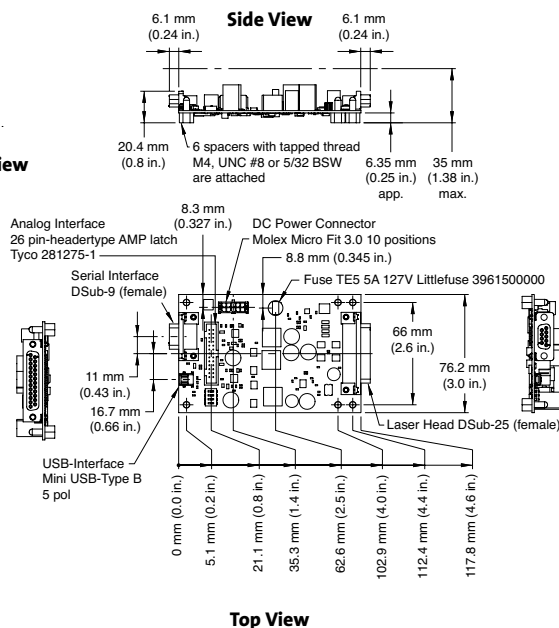
Fiber Pigtailed Lasers from Deep Blue to Orange

## Mechanical Specifications

### Laser Head



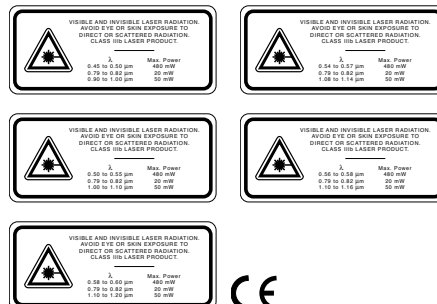
### Controller



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# Sapphire SF

## CW Blue and Green Single-Frequency Lasers

The Coherent Sapphire SF is a series of compact CW visible single-frequency lasers based on Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology. OPSL technology delivers established legacy wavelengths of ion and diode-pumped solid-state lasers, and its scalability allows for customized wavelengths to be developed and tailored to a specific application.

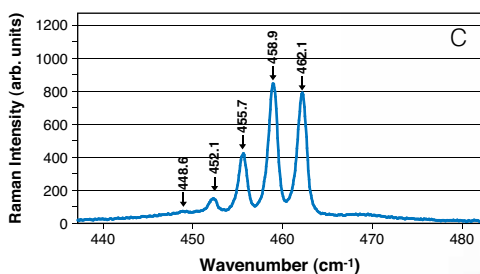
The Sapphire SF lasers are manufactured in clean rooms using Coherent's patented PermAlign™ technology to deliver optimal aligning and solder bonding of the optics. This patented technology results in an industry-best beam quality and power stability as well as the lowest noise over the complete lifetime of the laser.

The Sapphire SF lasers are provisioned with flexible interfaces including Analog, RS-232, and USB, offering a choice of communication channels for every customer's specific requirement.

Sapphire SF 488 overcomes the disadvantages of ion lasers (size, power consumption, background light, cost of ownership) and diode lasers (beam quality, wavelength precision).

The Sapphire SF 532 is a technologically superior alternative to Nd:YAG or Nd:YVO<sub>4</sub> based lasers; eliminating thermal lensing and green noise effects, and power instability caused by intra cavity frequency-doubling mechanisms.

The Sapphire SF lasers are intended for applications that need narrow and ultra-narrow linewidth light such as Raman spectroscopy, interferometry, holography, metrology, and inspection.



**High Resolution  
Raman Spectra**



### Sapphire SF Features:

- All Sapphire advantages with single-frequency linewidth
- Ultra-low noise
- Ultra-narrow linewidth

### Sapphire SF Applications:

- Raman spectroscopy
- Holography
- Metrology
- Inspection

System Specifications	Sapphire 488 SF	Sapphire 532 SF
Wavelength (nm)	488	532
Wavelength Accuracy (nm)		0.1
Single-longitudinal Mode, Linewidth (MHz)		<1.5
Output Power <sup>1</sup> (mW)	20, 50, 100	20, 50, 100, 150
Spatial Mode	TEM <sub>00</sub> , M <sup>2</sup> <1.1, single longitudinal mode	
Beam Asymmetry		0.9 to 1.1
Beam Diameter at 1/e <sup>2</sup> (mm)		0.70 ±0.05
Beam Divergence (mrad)		<1.3
Pointing Stability (over 2 hours after warm-up and ±3°C)(μrad)		<30
Noise (%)		
20 Hz to 2 MHz, rms		<0.25
20 Hz to 20 kHz, peak-to-peak		<1
Long-term Power Stability (%) (2 hours, ±3°C)		<2
Warm-up Time (minutes)		<5
Polarization Ratio		>100:1, vertical
Static Alignment Tolerances <sup>2</sup>		
Beam Position (mm)		±0.25
Beam Angle (mrad)		±2.5
Beam Waist Position with respect to Exit Window		±200 <sup>3</sup>

### Utility and Environmental Requirements

Interfacing	Analogue, RS-232, USB
Operating Voltage <sup>4</sup> (VDC)	+10.8 to 15
Power Consumption (W)	<60
Max. Laser Head Baseplate Temp. <sup>5</sup>	+50°C (122°F)
Max. Heat Dissipation of Head (W)	25 (baseplate at 50°C)
Ambient Temperature	
Operating Conditions	10 to 40°C (50 to 104°F) non-condensing
Non-Operating Condition	-30 to 60°C (-22 to 140°F)
Shock Tolerance (6 ms)	7g laterally, 15g vertically
Dimensions (L x W x H)	
Laser Head	125 x 70 x 34 mm (4.9 x 2.8 x 1.3 in.)
Controller	117.8 x 76.2 x 43.2 mm (4.6 x 3.0 x 1.7 in.)
Heat Sink (optional)	200 x 80 x 50 mm (7.9 x 3.2 x 2 in.)
DC Power Supply (optional)	172 x 105 x 55 mm (6.8 x 4.1 x 2.2 in.)
Cable — Laser Head to Controller	2m (6.56 ft.), optional 5m (16.4 ft.)
Weights	
Laser Head	0.35 kg (0.77 lbs.)
Controller	0.25 kg (0.55 lbs.)
Heat Sink (optional)	0.75 kg (1.65 lbs.)
DC Power Supply (optional)	0.95 kg (incl. line cable) (2.1 lbs.)
Packaged System (head+controller+cable>manual)	1.7 kg (3.7 lbs.)
Cable — Laser Head to Controller	0.3 kg (0.66 lbs.)

### Measurement Tools

		Part Number
Meter	FieldMax™II-TO	1098579
Sensor	PS10Q	1098400

<sup>1</sup> Output power is adjustable via analog or digital interface from 10% to 110%. Specifications are valid for 100% power. Recommended power range is 70 to 110% power.

<sup>2</sup> Static alignment tolerances are relative to the right bottom edge (in beam direction).

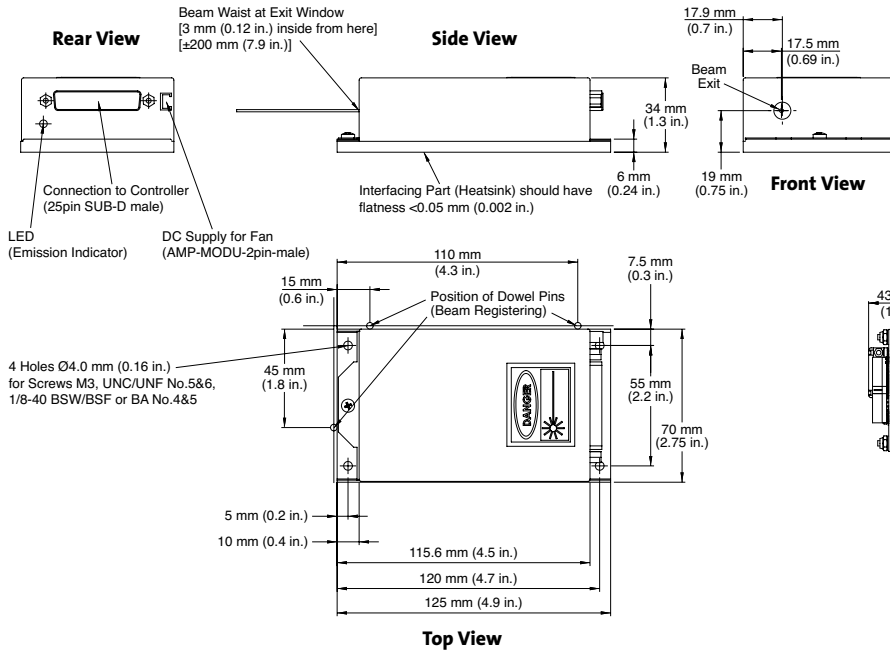
<sup>3</sup> 200mm is ~25% of Raleigh Range at 488 nm and ~30% of Raleigh Range at 532 nm.

<sup>4</sup> If user-supplied, the DC power supply has to meet the following requirements: Power >60W; ripple <5% peak-to-peak; line regulation <0.5%.

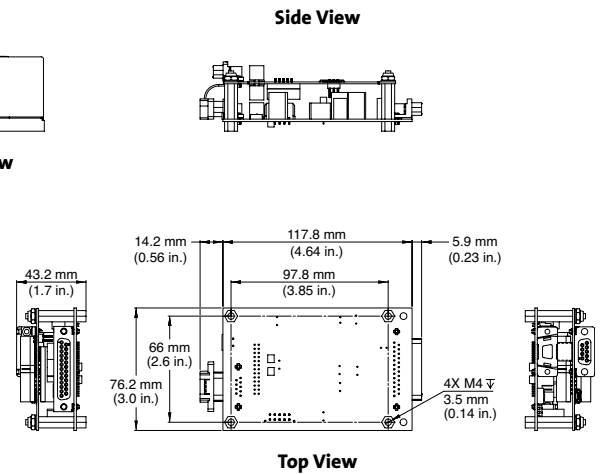
<sup>5</sup> With factory-provided or other adequate heat sink.

### Mechanical Specifications

#### Laser Head



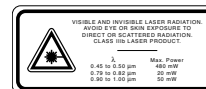
#### Controller



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# Genesis CX STM-Series

TEM<sub>00</sub> UV and Visible OEM and End-User OPS Laser Systems

Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology powers the Genesis CX-STM Series, providing up to 250 mW of UV laser light or up to 10W of visible laser light from either OEM or CDRH-compliant end-user systems.

Ideal for applications such as Flow Cytometry, Particle Counting, DNA Sequencing and Microscopy, these lasers provide a TEM<sub>00</sub> power invariant beam with low noise and high stability in a convenient package.

The Genesis CX STM-Series is the perfect laser platform for customers requiring high-performing CW laser technology for research and instrumentation in life science and biological applications.



**Superior Reliability & Performance**

## **Genesis CX STM-Series Features:**

- **Single transverse mode (TEM<sub>00</sub>)**
- **OEM or end-user versions**
- **Air or water-cooled solutions**
- **Power invariant beam quality**

## **Genesis CX STM-Series Applications:**

- **Flow Cytometry**
- **Particle Counting**
- **DNA Sequencing**
- **Microscopy**

[www.Coherent.com/GenesisCX\\_STM-Series](http://www.Coherent.com/GenesisCX_STM-Series)

# Genesis CX STM-Series

TEM<sub>00</sub> UV and Visible OEM and End-User OPS Laser Systems



## Optical Specifications<sup>2</sup>

### Genesis CX 355<sup>1</sup>

Wavelength (nm)	355 ±2
FWHM Linewidth (GHz)	<50
Pulse Format	CW
Spectral Purity (%)	>99
Output Power (mW)	40, 60, 80, 100, 150, 200, 250
Spatial Mode	TEM <sub>00</sub>
Beam Quality (M <sup>2</sup> )	<1.2
Beam Circularity <sup>3</sup>	1.0 ±0.1
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )	
Horizontal	0.975 ±0.2
Vertical	0.915 ±0.2
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )	<1.2
Beam Waist Location <sup>4</sup> (mm)	±325
Beam Pointing Stability <sup>5</sup> (μrad/°C)	<6
Horizontal Beam Position Tolerance (mm)	±<1.0
Vertical Beam Position Tolerance (mm)	±<1.0
Beam Pointing Tolerance (mrad)	<5
Polarization Ratio	Linear, >100:1
Polarization Direction	Vertical, ±5°
Noise (% rms)(10 Hz to 1 MHz)	<0.1
Power Stability (%)(pk-pk)	±<1
Warm-up Time (minutes)	<10
CDRH Compliant	Yes

## Electrical Specifications

Operating Voltage (VAC)	100 to 240
Frequency (Hz)	50 to 60
Power Consumption (W)	500 <sup>8</sup>

## Environmental Conditions

Ambient Temperature (°C)	
Operating	10 to 40
Non-operating	-10 to 60
Relative Humidity <sup>6</sup> (%)	5 to 95
CE Marking	IEC 61010-1/EN 61010-1
Dimensions (L x W x H)	
Laser Head <sup>7</sup>	281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)
Cables (laser head to controller)	2m (6.5 ft.)

<sup>1</sup> Available in OEM or end user versions.

<sup>2</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>3</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>4</sup> Negative value corresponds to a location inside head.

<sup>5</sup> After warm-up over 2 hours.

<sup>6</sup> Non-condensing.

<sup>7</sup> Back connector not included in laser head length dimension.

<sup>8</sup> Power consumption for the CX 355-250 is 600W.

# Genesis CX STM-Series

TEM<sub>00</sub> UV and Visible OEM and End-User OPS Laser Systems



Optical Specifications <sup>2</sup>	Genesis CX 460 <sup>1</sup>	Genesis CX 480 <sup>1</sup>	Genesis CX 488 <sup>1</sup>	Genesis CX 514 <sup>1</sup>
Wavelength (nm)	460 ±3	480 ±3	488 ±3	514 ±3
FWHM Linewidth (GHz)			<30	
Pulse Format			CW	
Spectral Purity (%)			>99	
Output Power (mW)	1000	1000, 2000	2000, 4000	2000, 4000
Spatial Mode			TEM <sub>00</sub>	
Beam Quality			<1.1	
Beam Circularity <sup>3</sup>			1.0 ±0.1	
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )			2.25 ±10%	
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )			<0.5	
Beam Waist Location <sup>4</sup> (m)			±0.5	
Beam Pointing Stability <sup>5</sup> (μrad/°C)			<2	
Horizontal Beam Position Tolerance <sup>6</sup> (mm)			±<1.0	
Vertical Beam Position Tolerance <sup>6</sup> (mm)			±<1.0	
Beam Pointing Tolerance <sup>6</sup> (mrad)			<5	
Polarization Ratio			Linear, >100:1	
Polarization Direction			Horizontal, ±5°	
Noise (% rms)(10 Hz to 10 MHz)			<0.1	
Power Stability <sup>7</sup> (%) (pk-pk)			±<1	
Warm-up Time (minutes)			<10	
CDRH Compliant			Yes	
<b>Electrical Specifications</b>				
Operating Voltage (VAC)			100 to 240	
Frequency (Hz)			50 to 60	
Power Consumption (W)			500	
<b>Environmental Conditions</b>				
Ambient Temperature (°C)				
Operating			10 to 40	
Non-operating			-10 to 60	
Relative Humidity <sup>8</sup> (%)			5 to 95	
CE Marking			IEC 61010-1/EN 61010-1	
Dimensions (L x W x H)				
Laser Head <sup>9</sup>			281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)	
Cables (laser head to controller)			2m (6.5 ft.)	

<sup>1</sup> Available in OEM or end user versions.

<sup>2</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>3</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>4</sup> Negative value corresponds to a location inside head.

<sup>5</sup> After 2-hour warm-up.

<sup>6</sup> Measured at the output window.

<sup>7</sup> Measured over 8 hrs.

<sup>8</sup> Non-condensing.

<sup>9</sup> Back connector not included in laser head length dimension.



# Genesis CX STM-Series

TEM<sub>00</sub> UV and Visible OEM and End-User OPS Laser Systems



Optical Specifications <sup>2</sup>	Genesis CX 532 <sup>1</sup>	Genesis CX 532	Genesis CX 561	Genesis CX 577 <sup>1</sup>	Genesis CX 590
Wavelength (nm)	532 ±3	532 ±3	561 ±3	577 ±3	590 ±3
FWHM Linewidth (GHz)			<30		
Pulse Format			CW		
Spectral Purity (%)			>99		
Output Power (mW)	2000, 4000, 5000, 6000, 7000	8000, 10,000	3000	1000, 2000,	1000, 2000, 3000
Spatial Mode			TEM <sub>00</sub>		
Beam Quality			<1.1		
Beam Circularity <sup>3</sup>			1.0 ±0.1		
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )			2.25 ±10%		
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )			<0.5		
Beam Waist Location <sup>4</sup> (m)			±0.5		
Beam Pointing Stability <sup>5</sup> (μrad/°C)			<2		
Horizontal Beam Position Tolerance <sup>6</sup> (mm)			±<1.0		
Vertical Beam Position Tolerance <sup>6</sup> (mm)			±<1.0		
Beam Pointing Tolerance <sup>6</sup> (mrad)			<5		
Polarization Ratio			Linear, >100:1		
Polarization Direction			Horizontal, ±5°		
Noise (% rms)(10 Hz to 10 MHz)			<0.1		
Power Stability <sup>7</sup> (%) (pk-pk)			±<1		
Warm-up Time (minutes)			<10		
CDRH Compliant			Yes		
<b>Electrical Specifications</b>					
Operating Voltage (VAC)			100 to 240		
Frequency (Hz)			50 to 60		
Power Consumption (W)	500	700	700	500	500
<b>Environmental Conditions</b>					
Ambient Temperature (°C)					
Operating			10 to 40		
Non-operating			-10 to 60		
Relative Humidity <sup>8</sup> (%)			5 to 95		
CE Marking			IEC 61010-1/EN 61010-1		
Dimensions (L x W x H)					
Laser Head <sup>9</sup>			281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)		
Cables (laser head to controller)			2m (6.5 ft.)		

<sup>1</sup> Available in OEM or end user versions.

<sup>2</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>3</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>4</sup> Negative value corresponds to a location inside head.

<sup>5</sup> After 2-hour warm-up.

<sup>6</sup> Measured at the output window.

<sup>7</sup> Measured over 8 hrs.

<sup>8</sup> Non-condensing.

<sup>9</sup> Back connector not included in laser head length dimension.

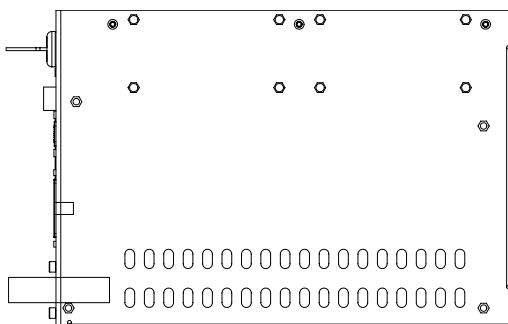
## Genesis CX STM-Series

TEM<sub>00</sub> UV and Visible OEM and End-User OPS Laser Systems

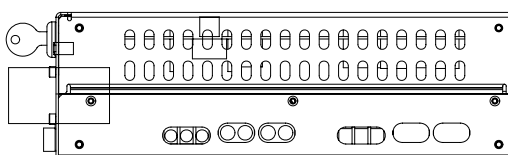
### Mechanical Specifications

#### Genesis CX-Series High Current OEM Power Supply

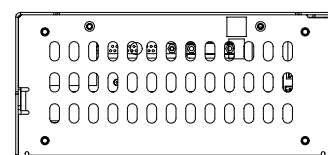
Top View



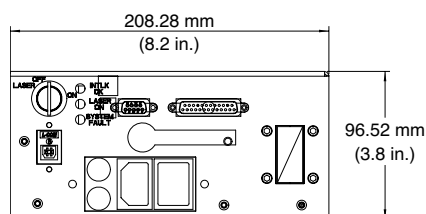
Side View



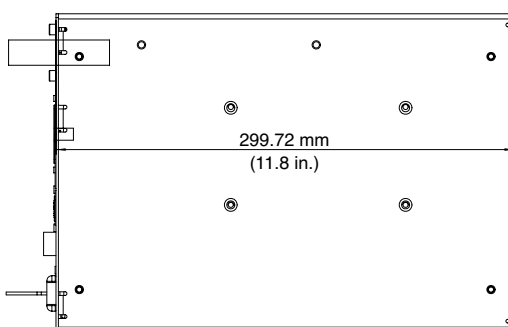
Rear View



Front View

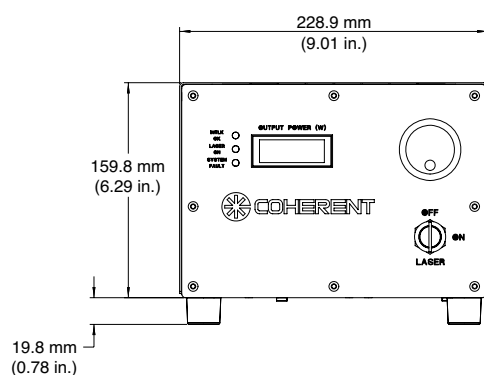


Bottom View

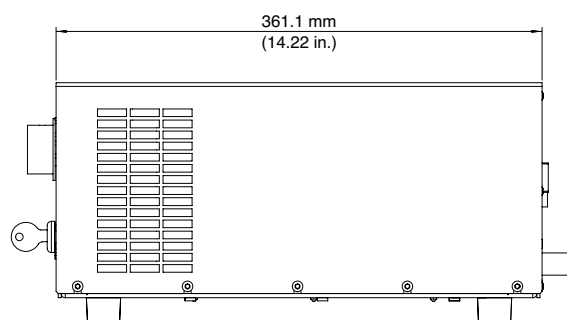


#### Genesis CX-Series Benchtop Power Supply

Front View



Side View

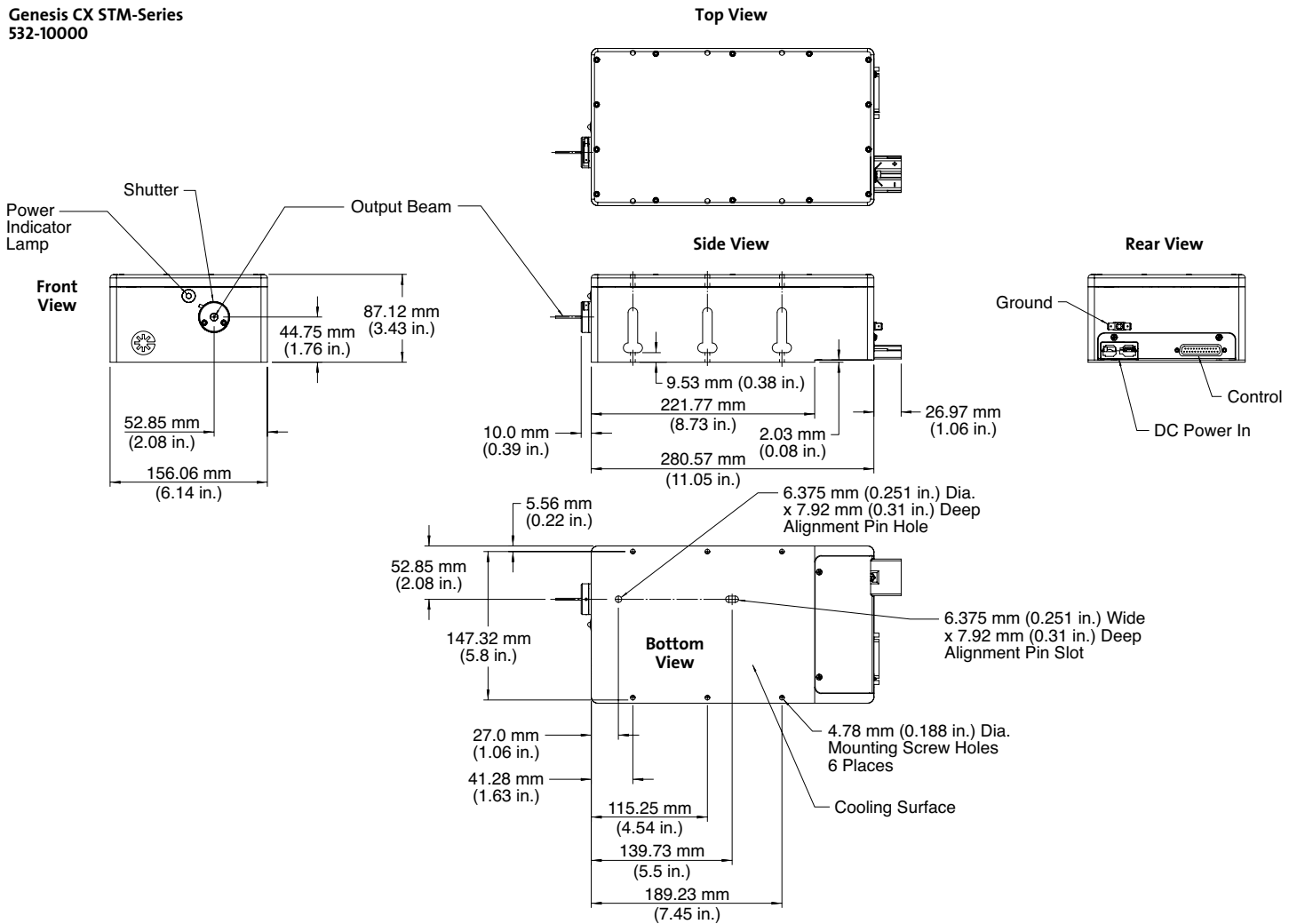


## Genesis CX STM-Series

TEM<sub>00</sub> UV and Visible OEM and End-User OPS Laser Systems

### Mechanical Specifications

Genesis CX STM-Series  
532-10000



# Genesis CX STM-Series

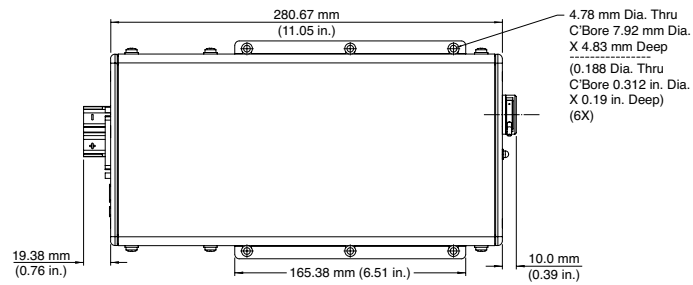
TEM<sub>00</sub> UV and Visible OEM and End-User OPS Laser Systems



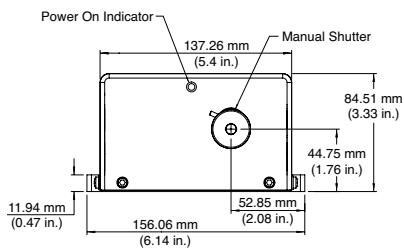
## Mechanical Specifications

Genesis CX STM-Series  
OEM and End User

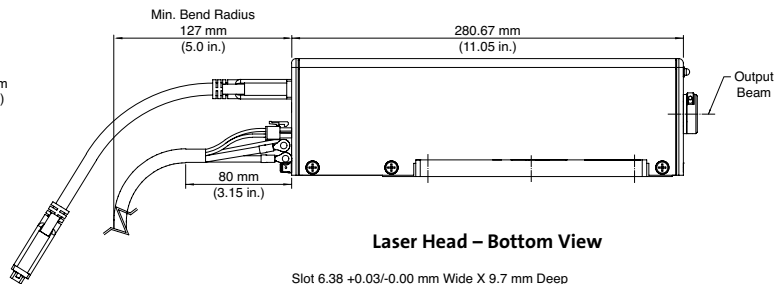
Laser Head – Top View



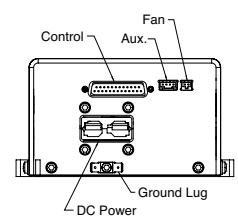
Laser Head – Front View



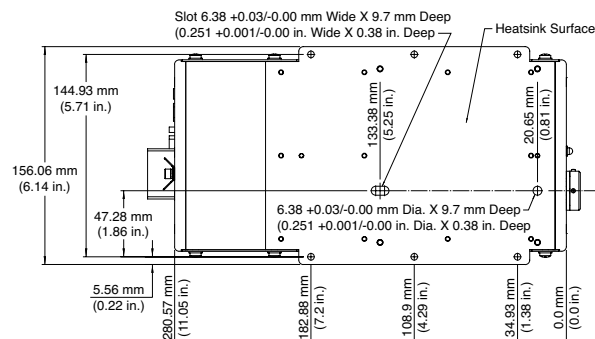
Laser Head – Side View



Laser Head – Rear View



Laser Head – Bottom View



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# Genesis CX 355 STM Compact (OEM)

TEM<sub>00</sub> 355 nm OEM OPS Laser Systems

Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology powers the Genesis CX-STM Compact, providing up to 100 mW of 355 nm laser light from an OEM system.

Ideal for applications such as Flow Cytometry and Particle Counting, these lasers provide a TEM<sub>00</sub> power invariant beam with low noise and high stability in a simple-to-integrate, air-cooled package.

The Genesis CX STM Compact is the perfect laser platform for customers requiring easy integration of high-performing CW laser technology into life science and bioinstrumentation.



## **Genesis CX 355 STM Compact (OEM) Features:**

- **Single transverse mode (TEM<sub>00</sub>)**
- **Reduced sized OEM**
- **Air-cooled solution**

## **Genesis CX 355 STM Compact (OEM) Applications:**

- **Flow Cytometry**
- **Particle Counting**
- **Microscopy**

# Genesis CX 355 STM Compact (OEM)

TEM<sub>00</sub> 355 nm OEM OPS Laser Systems



## Optical Specifications<sup>1</sup>

### Genesis CX 355

Wavelength (nm)	355 ±2
FWHM Linewidth (GHz)	<50
Pulse Format	CW
Spectral Purity (%)	>99
Output Power (mW)	40, 60, 80, 100
Spatial Mode	TEM <sub>00</sub>
Beam Quality (M <sup>2</sup> )	<1.2
Beam Circularity <sup>2</sup>	1.0 ±0.1
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )	
Horizontal	0.975 ±0.2
Vertical	0.915 ±0.2
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )	<1.2
Beam Waist Location <sup>3</sup> (mm)	±325
Beam Pointing Stability <sup>4</sup> (μrad/°C)	<6
Horizontal Beam Position Tolerance (mm)	±<1.0
Vertical Beam Position Tolerance (mm)	±<1.0
Beam Pointing Tolerance (mrad)	<5
Polarization Ratio	Linear, >100:1
Polarization Direction	Horizontal, ±5°
Noise (% rms)(10 Hz to 1 MHz)	<0.1
Power Stability (%) (pk-pk)	±<1
Warm-up Time (minutes)	<10
CDRH Compliant	Yes

## Electrical Specifications

Operating Voltage (VAC)	100 to 240
Frequency (Hz)	50 to 60
Power Consumption (W)	500

## Environmental Conditions

Ambient Temperature (°C)	
Operating	10 to 40
Non-operating	-10 to 60
Relative Humidity <sup>5</sup> (%)	5 to 95
CE Marking	IEC 61010-1/EN 61010-1
Dimensions (L x W x H)	
Laser Head <sup>6</sup>	250.1 x 138.0 x 50.8 mm (9.84 x 5.4 x 2.0 in.)
Cables (laser head to controller)	2m (6.5 ft.)

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>3</sup> Negative value corresponds to a location inside head.

<sup>4</sup> After warm-up over 2 hours.

<sup>5</sup> Non-condensing.

<sup>6</sup> Back connector not included in laser head length dimension.

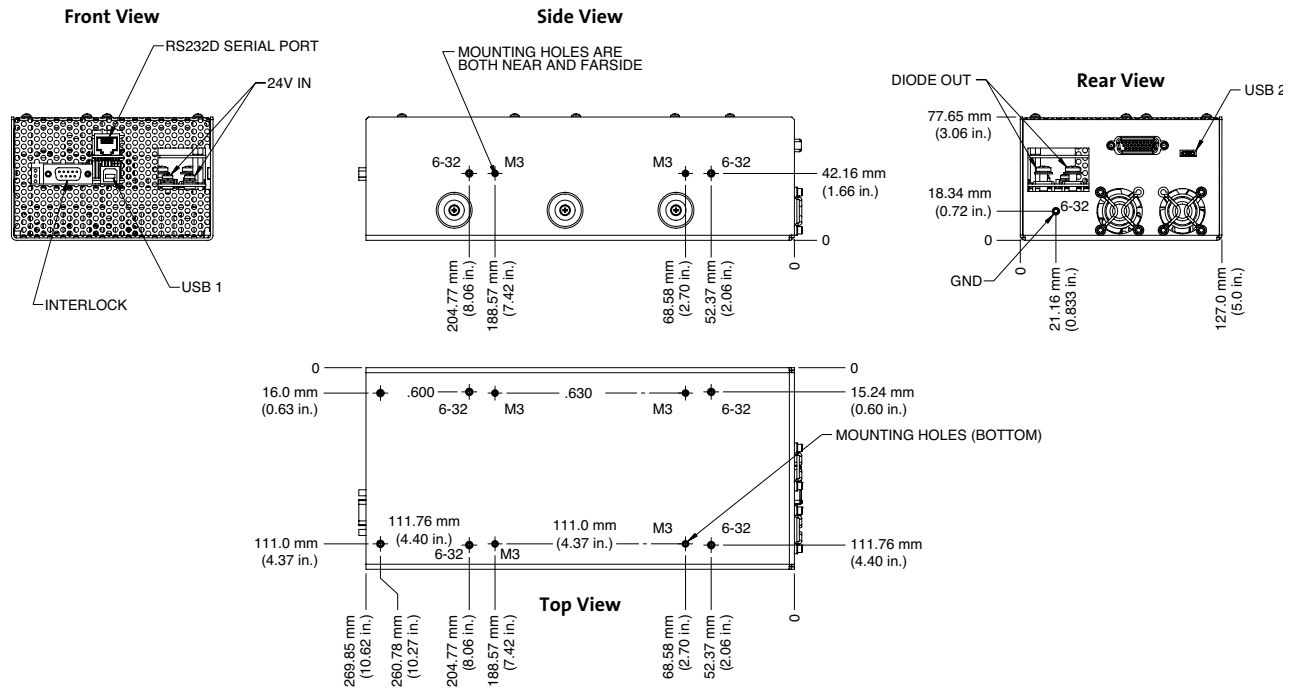
# Genesis CX 355 STM Compact (OEM)

TEM<sub>00</sub> 355 nm OEM OPS Laser Systems

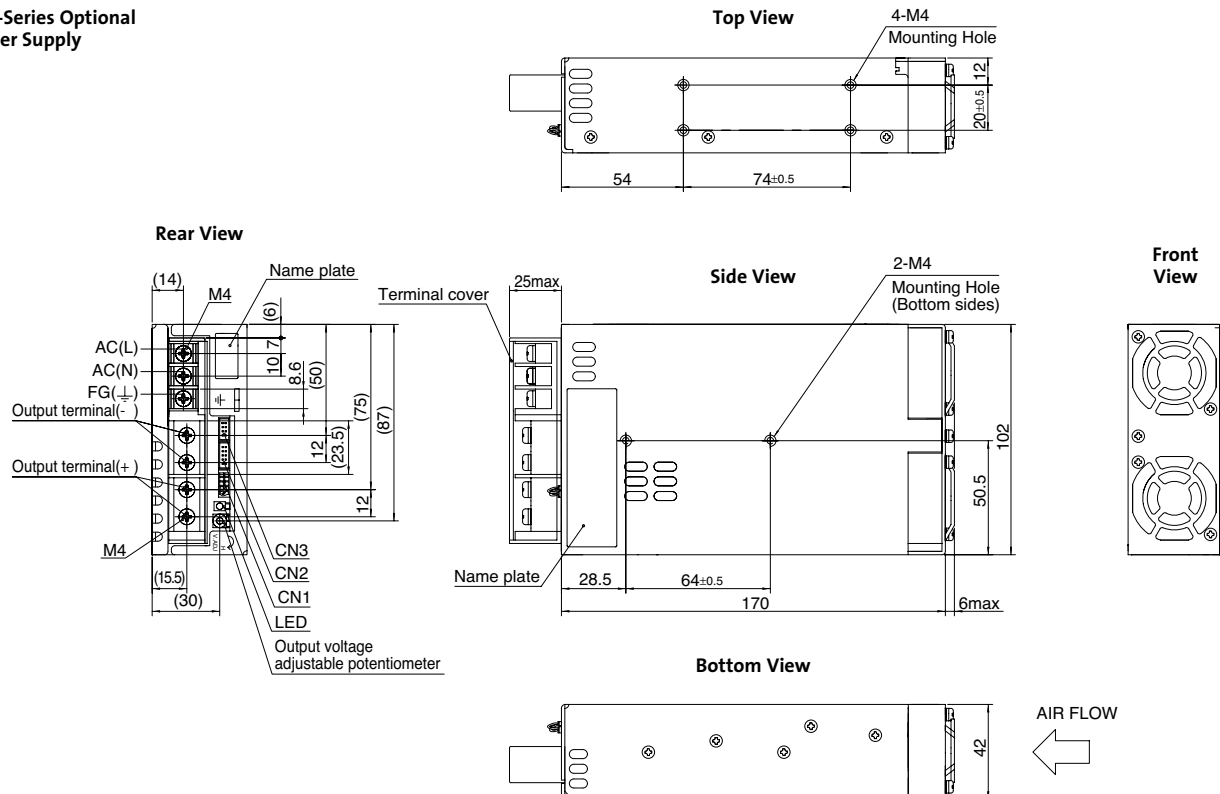


## Mechanical Specifications

### Genesis CX Compact Controller



### Genesis CX-Series Optional AC/DC Power Supply



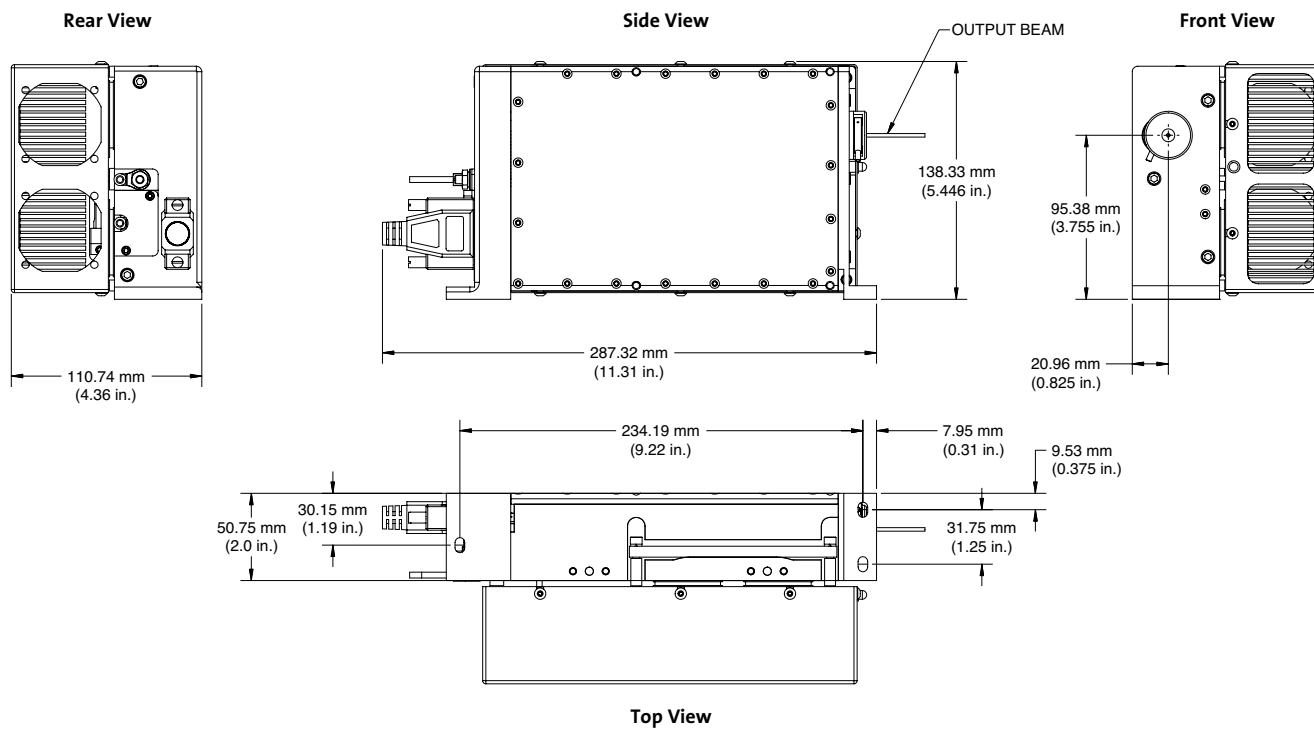
# Genesis CX 355 STM Compact (OEM)

TEM<sub>00</sub> 355 nm OEM OPS Laser Systems



## Mechanical Specifications

### Genesis CX 355 STM Compact (OEM)



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ISO 9001 Registered



# Genesis CX SLM-Series

## Single Frequency UV and Visible OEM and End-User OPS Laser Systems

Applications like Flow Cytometry, Particle Counting, DNA Sequencing and Microscopy are enabled by true CW lasers with low noise in the UV and visible. The Genesis CX SLM-Series provides up to 100 mW of UV laser light or up to 4W of visible laser light from either a simple, CDRH-compliant turn-key system or an easy-to-integrate air-cooled or water-cooled package.

Based on Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology, the Genesis CX SLM-Series features single-frequency operation for the most demanding of applications. This, combined with stable beam parameters across output powers, a diffraction limited beam, lowest noise and high stability, provides unparalleled laser performance in a convenient package.

Genesis CX SLM-Series is the perfect match for customers in need of the highest performing CW laser technology for research and instrumentation in life science and biological applications.

### Genesis CX SLM-Series Features:

- All Genesis CX advantages with single-frequency output
- OEM or end-user versions
- Air or water-cooled solutions

### Genesis CX SLM-Series Applications:

- Flow Cytometry
- Particle Counting
- DNA Sequencing
- Microscopy



**Superior Reliability & Performance**

[www.Coherent.com/GenesisCX\\_SLM-Series](http://www.Coherent.com/GenesisCX_SLM-Series)

# Genesis CX SLM-Series

Single Frequency UV and Visible OEM and End-User OPS Laser Systems



## Optical Specifications<sup>2</sup>

Genesis  
CX 355<sup>1</sup>

Wavelength (nm)	355 ±2
FWHM Linewidth (MHz)	<5
Pulse Format	CW
Spectral Purity (%)	>99
Output Power (mW)	40, 60, 80, 100
Spatial Mode	TEM <sub>00</sub>
Beam Quality (M <sup>2</sup> )	<1.2
Beam Circularity <sup>3</sup>	1.0 ±0.1
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )	
Horizontal	0.975 ±0.2
Vertical	0.915 ±0.2
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )	<1.2
Beam Waist Location <sup>4</sup> (mm)	±325
Beam Pointing Stability <sup>5</sup> (μrad/°C)	<6
Horizontal Beam Position Tolerance (mm)	±<1.0
Vertical Beam Position Tolerance (mm)	±<1.0
Beam Pointing Tolerance (mrad)	<5
Polarization Ratio	Linear, >100:1
Polarization Direction	Vertical, ±5°
Noise (% rms)(10 Hz to 1 MHz)	<0.1
Power Stability (%) (pk-pk)	±<1
Warm-up Time (minutes)	<10
CDRH Compliant	Yes

## Electrical Specifications

Operating Voltage (VAC)	100 to 240
Frequency (Hz)	50 to 60
Power Consumption (W)	500

## Environmental Conditions

Ambient Temperature (°C)	
Operating	10 to 40
Non-operating	-10 to 60
Relative Humidity <sup>6</sup> (%)	5 to 95
CE Marking	IEC 61010-1/EN 61010-1
Dimensions (L x W x H)	
Laser Head <sup>7</sup>	281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)
Cables (laser head to controller)	2m (6.5 ft.)

<sup>1</sup> Available in OEM or end user versions.

<sup>2</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>3</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>4</sup> Negative value corresponds to a location inside head.

<sup>5</sup> After warm-up over 2 hours.

<sup>6</sup> Non-condensing.

<sup>7</sup> Back connector not included in laser head length dimension.

# Genesis CX SLM-Series

Single Frequency UV and Visible OEM and End-User OPS Laser Systems



Optical Specifications <sup>2</sup>	Genesis CX 460 <sup>1</sup>	Genesis CX 480 <sup>1</sup>	Genesis CX 488 <sup>1</sup>
Wavelength (nm)	460 ±3	480 ±3	488 ±3
FWHM Linewidth (MHz)		<5	
Pulse Format		CW	
Spectral Purity (%)		>99	
Output Power (mW)	1000	1000	2000
Spatial Mode		TEM <sub>00</sub>	
Beam Quality		<1.1	
Beam Circularity <sup>3</sup>		1.0 ±0.1	
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )		2.25 ±10%	
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )		<0.5	
Beam Waist Location <sup>4</sup> (m)		±0.5	
Beam Pointing Stability <sup>5</sup> (μrad/°C)		<2	
Horizontal Beam Position Tolerance <sup>6</sup> (mm)		±1.0	
Vertical Beam Position Tolerance <sup>6</sup> (mm)		±1.0	
Beam Pointing Tolerance <sup>6</sup> (mrad)		<5	
Polarization Ratio		Linear, >100:1	
Polarization Direction		Horizontal, ±5°	
Noise (% rms)(10 Hz to 10 MHz)		<0.1	
Power Stability <sup>7</sup> (%) (pk-pk)		±1	
Warm-up Time (minutes)		<10	
CDRH Compliant		Yes	
<b>Electrical Specifications</b>			
Operating Voltage (VAC)		100 to 240	
Frequency (Hz)		50 to 60	
Power Consumption (W)		500	
<b>Environmental Conditions</b>			
Ambient Temperature (°C)			
Operating		10 to 40	
Non-operating		-10 to 60	
Relative Humidity <sup>8</sup> (%)		5 to 95	
CE Marking		IEC 61010-1/EN 61010-1	
Dimensions (L x W x H)			
Laser Head <sup>9</sup>		281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)	
Cables (laser head to controller)		2m (6.5 ft.)	

<sup>1</sup> Available in OEM or end user versions.

<sup>2</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>3</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>4</sup> Negative value corresponds to a location inside head.

<sup>5</sup> After 2-hour warm-up.

<sup>6</sup> Measured at the output window.

<sup>7</sup> Measured over 8 hrs.

<sup>8</sup> Non-condensing.

<sup>9</sup> Back connector not included in laser head length dimension.

## Genesis CX SLM-Series

Single Frequency UV and Visible OEM and End-User OPS Laser Systems

Optical Specifications <sup>2</sup>	Genesis CX 514 <sup>1</sup>	Genesis CX 532 <sup>1</sup>	Genesis CX 561	Genesis CX 577 <sup>1</sup>	Genesis CX 590
Wavelength (nm)	514 ±3	532 ±3	561 ±3	577 ±3	590 ±3
FWHM Linewidth (MHz)			<5		
Pulse Format			CW		
Spectral Purity (%)			>99		
Output Power (mW)	2000, 4000	2000, 4000	1000	2000	1000
Spatial Mode			TEM <sub>00</sub>		
Beam Quality			<1.1		
Beam Circularity <sup>3</sup>			1.0 ±0.1		
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )			2.25 ±10%		
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )			<0.5		
Beam Waist Location <sup>4</sup> (m)			±0.5		
Beam Pointing Stability <sup>5</sup> (μrad/°C)			<2		
Horizontal Beam Position Tolerance <sup>6</sup> (mm)			±<1.0		
Vertical Beam Position Tolerance <sup>6</sup> (mm)			±<1.0		
Beam Pointing Tolerance <sup>6</sup> (mrad)			<5		
Polarization Ratio			Linear, >100:1		
Polarization Direction			Horizontal, ±5°		
Noise (% rms)(10 Hz to 10 MHz)			<0.1		
Power Stability <sup>7</sup> (%) (pk-pk)			±<1		
Warm-up Time (minutes)			<10		
CDRH Compliant			Yes		
<b>Electrical Specifications</b>					
Operating Voltage (VAC)			100 to 240		
Frequency (Hz)			50 to 60		
Power Consumption (W)			500		
<b>Environmental Conditions</b>					
Ambient Temperature (°C)					
Operating			10 to 40		
Non-operating			-10 to 60		
Relative Humidity <sup>8</sup> (%)			5 to 95		
CE Marking			IEC 61010-1/EN 61010-1		
Dimensions (L x W x H)					
Laser Head <sup>9</sup>			281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)		
Cables (laser head to controller)			2m (6.5 ft.)		

<sup>1</sup> Available in OEM or end user versions.

<sup>2</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>3</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>4</sup> Negative value corresponds to a location inside head.

<sup>5</sup> After 2-hour warm-up.

<sup>6</sup> Measured at the output window.

<sup>7</sup> Measured over 8 hrs.

<sup>8</sup> Non-condensing.

<sup>9</sup> Back connector not included in laser head length dimension.

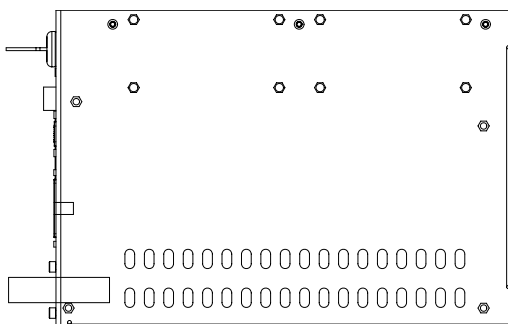
## Genesis CX SLM-Series

Single Frequency UV and Visible OEM and End-User OPS Laser Systems

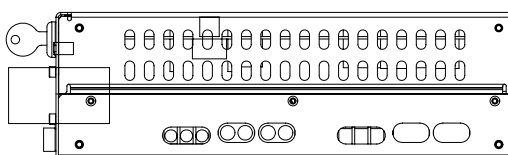
### Mechanical Specifications

Genesis CX-Series  
High Current OEM Power Supply

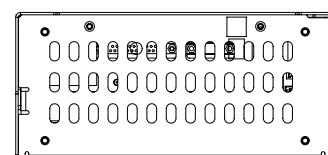
Top View



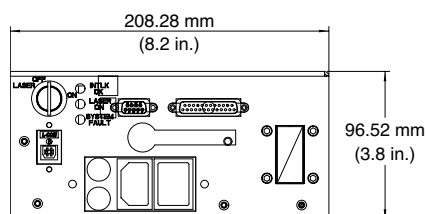
Side View



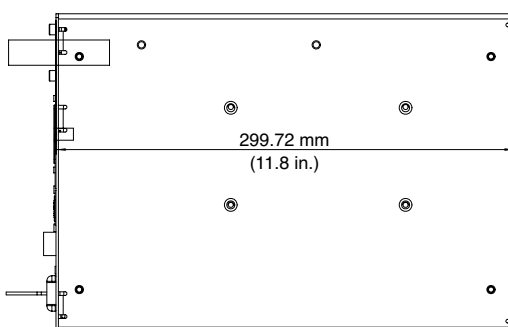
Rear View



Front View

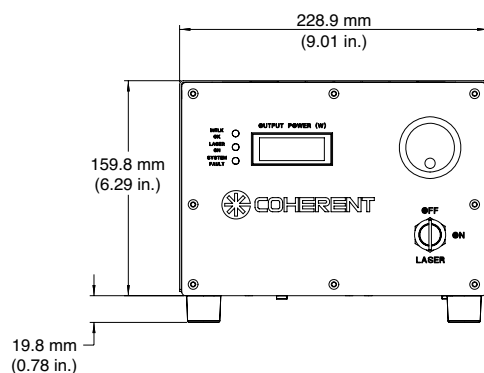


Bottom View

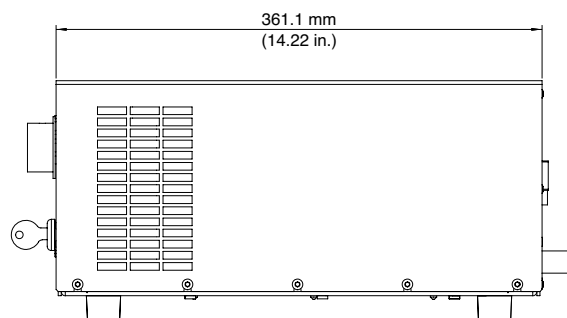


Genesis CX-Series  
Benchtop Power Supply

Front View



Side View

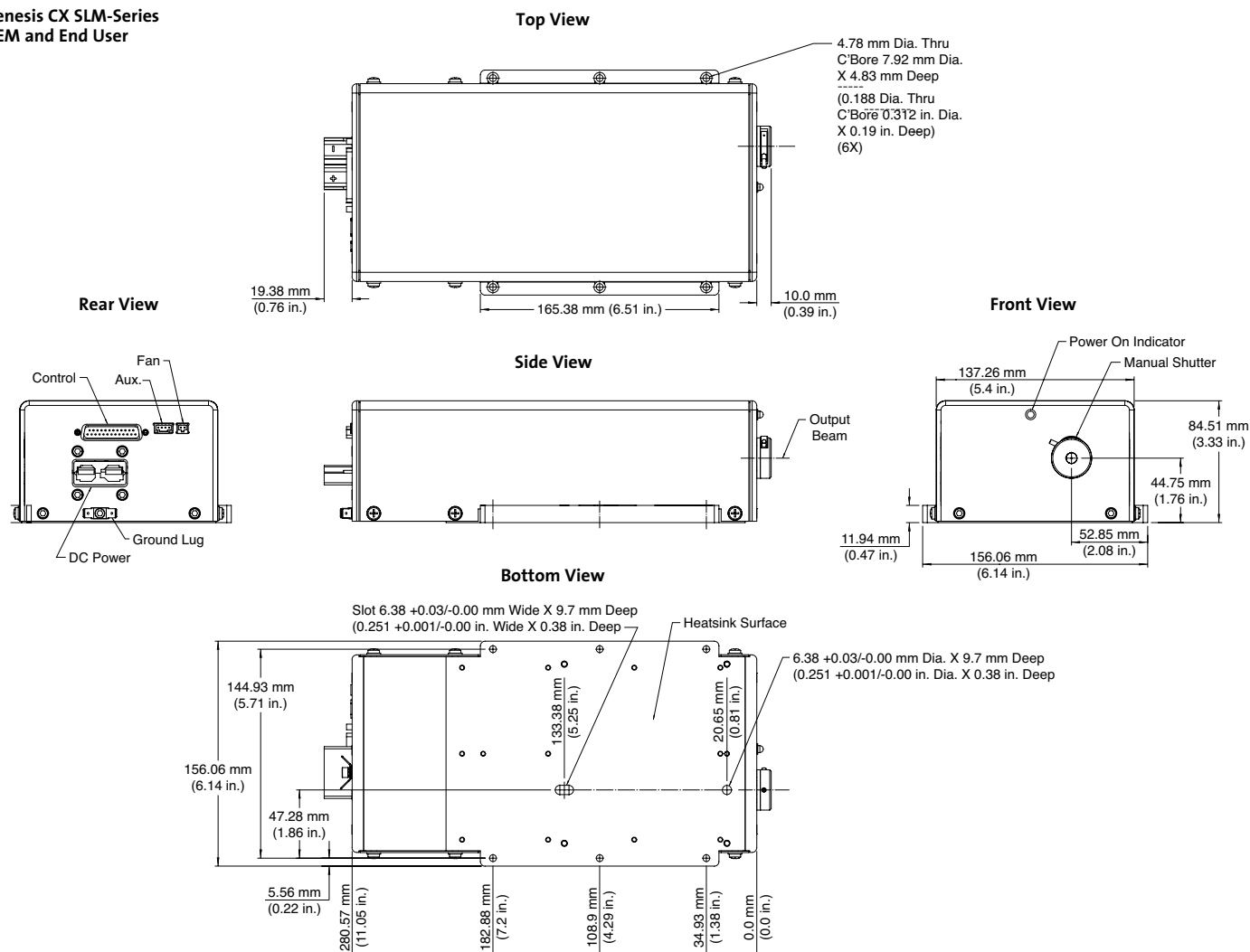


# Genesis CX SLM-Series

Single Frequency UV and Visible OEM and End-User OPS Laser Systems

## Mechanical Specifications

### Genesis CX SLM-Series OEM and End User



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 ISO 9001 Registered

# Genesis MX MTM-Series

## Multitransverse Mode Visible and Infrared OEM and End-User OPS Laser Systems

Applications like Ophthalmology, Microscopy and Photocoagulation are enabled by low noise, visible and infrared true CW lasers. The Genesis MX MTM-Series provides up to 8W of visible laser light or 10W of infrared laser light from either OEM or CDRH-compliant end-user systems.

Based on Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology, the Genesis MX MTM-Series features variable output power without changing the beam parameters. This, combined with low noise and high stability, provides unparalleled laser performance in a convenient package.

Genesis MX MTM-Series is the perfect match for customers in need of the highest performing CW laser technology for research and instrumentation in medical and therapeutic applications.

### Genesis MX MTM-Series Features:

- **Multitransverse mode**
- **OEM or end-user versions**
- **Air- or water-cooled solutions**

### Genesis MX MTM-Series Applications:

- **Ophthalmology**
- **Microscopy**
- **Photocoagulation**

Genesis MX MTM-Series  
OEM version



[www.Coherent.com/GenesisMX\\_MTM-Series](http://www.Coherent.com/GenesisMX_MTM-Series)

**Superior Reliability & Performance**

# Genesis MX MTM-Series

Multitransverse Mode Visible and Infrared OEM and End-User OPS Laser Systems



Optical Specifications¹	Genesis MX 460	Genesis MX 480	Genesis MX 488	Genesis MX 514	Genesis MX 532
Wavelength (nm)	460 ±3	480 ±3	488 ±3	14 ±3	532 ±3
Pulse Format	CW				
Spectral Purity (%)	>99				
Output Power (mW)	1000, 2000	2000	3000, 5000	3000, 5000	3000, 5000, 8000
Spatial Mode	Multimode				
Beam Quality⁹ (M²)					
Horizontal	<7				
Vertical	<7				
Beam Circularity²,⁹,¹⁰	1.25				
Beam Waist Diameter⁹,¹⁰ (mm)(FW, 1/e²)	1.4	1.6	1.6	1.8	1.8
Beam Divergence⁹,¹⁰ (mrad)(FW, 1/e²)	1.3	1.5	1.5	<1.4	<1.4
Beam Waist Location³,⁹,¹⁰ (nm)	0.25 ±0.25				
Beam Pointing Stability⁴,⁹ (μrad/°C)	<5				
Horizontal Beam Position Tolerance⁵ (mm)	±1.0				
Vertical Beam Position Tolerance⁵ (mm)	±1.0				
Beam Pointing Tolerance⁵ (mrad)	<5				
Polarization Ratio	Linear, >100:1				
Polarization Direction	Vertical, ±5°				
Noise					
10 Hz to 10 MHz (% rms)	<1				
10 Hz to 5 kHz (% peak-to-peak)	<10				
Power Stability⁶ (%) (pk-pk)	±1				
Warm-up Time (minutes)	<10				
CDRH Compliant	Yes				
Electrical Specifications					
Operating Voltage (VAC)	100 to 240				
Frequency (Hz)	50 to 60				
Power Consumption (W)	500				
Environmental Conditions					
Ambient Temperature (°C)					
Operating	10 to 40 water-cooled, 10 to 35 air-cooled				
Non-Operating	-10 to 60				
Relative Humidity⁷ (%)	5 to 95				
CE Marking	IEC 61010-1/EN 61010-1				
Dimensions (L x W x H)					
Laser Head⁸	281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)				
Cables (laser head to controller)	2m (6.5 ft.)				

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>3</sup> Negative value corresponds to a location inside head.

<sup>4</sup> After 2-hour warm-up.

<sup>5</sup> Measured at the output window.

<sup>6</sup> Measured over 8 hrs.

<sup>7</sup> Non-condensing.

<sup>8</sup> Back connector not included in laser head length dimension.

<sup>9</sup> Contact Coherent for any specific application requirements.

<sup>10</sup> Typical value.



# Genesis MX MTM-Series

Multitransverse Mode Visible and Infrared OEM and End-User OPS Laser Systems



Optical Specifications <sup>1</sup>	Genesis MX 561	Genesis MX 577	Genesis MX 590
Wavelength (nm)	561 ±3	577 ±3	590 ±3
Pulse Format		CW	
Spectral Purity (%)		>99	
Output Power (mW)	2000	3000, 5000	1000, 2000
Spatial Mode Multimode			
Beam Quality <sup>9</sup> (M <sup>2</sup> )			
Horizontal		<7	
Vertical		<7	
Beam Circularity <sup>2,9,10</sup>		1.25	
Beam Waist Diameter <sup>9,10</sup> (mm)(FW, 1/e <sup>2</sup> )		1.8	
Beam Divergence <sup>9,10</sup> (mrad)(FW, 1/e <sup>2</sup> )		<1.4	
Beam Waist Location <sup>3,9,10</sup> (nm)		0.25 ±0.25	
Beam Pointing Stability <sup>4,9</sup> (μrad/°C)		<5	
Horizontal Beam Position Tolerance <sup>5</sup> (mm)		±<1.0	
Vertical Beam Position Tolerance <sup>5</sup> (mm)		±<1.0	
Beam Pointing Tolerance <sup>5</sup> (mrad)		<5	
Polarization Ratio		Linear, >100:1	
Polarization Direction		Vertical, ±5°	
Noise			
10 Hz to 10 MHz (% rms) <1			
10 Hz to 5 kHz (% peak-to-peak) <10			
Power Stability <sup>6</sup> (%) (pk-pk)		±<1	
Warm-up Time (minutes)		<10	
CDRH Compliant		Yes	
<b>Electrical Specifications</b>			
Operating Voltage (VAC)		100 to 240	
Frequency (Hz)		50 to 60	
Power Consumption (W)		500	
<b>Environmental Conditions</b>			
Ambient Temperature (°C)			
Operating		10 to 40 water-cooled, 10 to 35 air-cooled	
Non-Operating		-10 to 60	
Relative Humidity <sup>7</sup> (%)		5 to 95	
CE Marking		IEC 61010-1/EN 61010-1	
Dimensions (L x W x H)			
Laser Head <sup>8</sup>		281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)	
Cables (laser head to controller)		2m (6.5 ft.)	

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>3</sup> Negative value corresponds to a location inside head.

<sup>4</sup> After 2-hour warm-up.

<sup>5</sup> Measured at the output window.

<sup>6</sup> Measured over 8 hrs.

<sup>7</sup> Non-condensing.

<sup>8</sup> Back connector not included in laser head length dimension.

<sup>9</sup> Contact Coherent for any specific application requirements.

<sup>10</sup> Typical value.

# Genesis MX MTM-Series

Multitransverse Mode Visible and Infrared OEM and End-User OPS Laser Systems



## Optical Specifications<sup>1</sup>

	Genesis MX 920	Genesis MX 1064	Genesis MX 1154
Wavelength (nm)	920 ±10	1064 ±10	1154 ±15
Output Power (mW)	4000	10,000	6000
Spatial Mode	Multimode		
Bandwidth (nm)	<5.0		
Beam Waist Dimensions (mm)			
Horizontal Size <sup>2</sup> (FW, 1/e <sup>2</sup> , mm)	0.6		
Vertical Size <sup>2</sup> (FW, 1/e <sup>2</sup> , mm)	0.6		
Location <sup>2,3</sup> (mm)	-150		
Beam Divergence			
Horizontal <sup>4</sup> (FW, 1/e <sup>2</sup> , mrad)	3.5		
Vertical <sup>4</sup> (FW, 1/e <sup>2</sup> , mrad)	3.5		
M <sup>2</sup>			
Horizontal	<2		
Vertical	<2		
Pointing Stability <sup>4</sup> (μrad/°C)	<5		
Noise			
10 Hz to 10 MHz (% rms)	<0.5		
10 Hz to 100 kHz (% peak-to-peak)	<10		
Polarization Ratio	Vertical, >100:1		

## Utility and Environmental Requirements

Operating Diode Current (A)	<30	<38	<32
Maximum Diode Current (A)	<36	<45	<38.5
Diode Voltage (V)	1.5 to 2.2		
Cooling Requirements <sup>5</sup>	Active cooling required		
Case Temperature (°C)	25 ±2		
Humidity	Non-condensing		
Dimensions (L x W x H)			
Laser Head <sup>5</sup>	256 x 49 x 71 mm (10.07 x 1.93 x 2.76 in.)		
Weight			
Laser Head (g)	730 ±10		

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Typical value.

<sup>3</sup> Measured from the output face, negative value corresponds to a location inside the head; positive outside.

<sup>4</sup> Measured at the output window: tolerance relative to the nominal center of the output window and perpendicular to the mounting plane.

<sup>5</sup> Contact integration support for options on air-cooling TEC or waterplate.

## Genesis MX MTM-Series

Multitransverse Mode Visible and Infrared OEM and End-User OPS Laser Systems

Optical Specifications <sup>1</sup>	Genesis MX 460 OEM	Genesis MX 480 OEM	Genesis MX 488 OEM	Genesis MX 514 OEM	Genesis MX 532 OEM
Wavelength (nm)	460 ±3	480 ±3	488 ±3	514 ±3	532 ±3
Output Power (mW)	1000, 2000	2000	3000, 5000	3000, 5000	3000, 5000, 8000
Spatial Mode	Multimode				
Bandwidth (nm)	<0.5				
Beam Waist Dimensions (mm)					
Horizontal Size <sup>2</sup> (FW, 1/e <sup>2</sup> , mm)	0.14	0.17	0.17	0.17	0.17
Vertical Size <sup>2</sup> (FW, 1/e <sup>2</sup> , mm)	0.11	0.13	0.16	0.13	0.13
Location <sup>2,3</sup> (mm)	-60				
Beam Divergence					
Horizontal <sup>2</sup> (FW, 1/e <sup>2</sup> , mrad)	<18	<20	<20	<20	<20
Vertical <sup>2</sup> (FW, 1/e <sup>2</sup> , mrad)	<16	<20	<20	<20	<20
Collimated Version					
Beam Waist Diameter <sup>2</sup> (1/e <sup>2</sup> , mm)	1.4	1.6	1.6	1.8	1.8
Beam Divergence <sup>2</sup> (1/e <sup>2</sup> , mrad)	1.3	1.5	1.5	1.4	1.4
Beam Waist Location <sup>2</sup> (m)	0.25 ±0.25				
M <sup>2</sup>					
Horizontal	<7				
Vertical	<7				
Pointing Stability <sup>4</sup> (μrad/°C)	<5				
Noise					
10 Hz to 10 MHz (% rms)	<1				
10 Hz to 5 kHz (% peak-to-peak)	<10				
Polarization Ratio	Horizontal, >100:1				
Direct Modulation <sup>5</sup>	Available				
Utility and Environmental Requirements					
Operating Diode Current (A)	<22.5, <27	<27	<30, <33	<30, <33	<30, <33, <38
Maximum Diode Current (A)	<27, <32	<32	<36, <40	<36, <40	<36, <40, <45
Diode Voltage (V)	1.5 to 2.2				
Cooling Requirements <sup>6</sup>	Active cooling required				
Case Temperature (°C)	25 ±2				
Humidity	Non-condensing				
Dimensions (L x W x H)					
Laser Head	121 x 44 x 65 mm (4.76 x 1.73 x 2.56 in.)				
Weight					
Laser Head (g)	730 ±10				

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Typical value.

<sup>3</sup> Measured from the output face, negative value corresponds to a location inside the head; positive outside.

<sup>4</sup> Measured at the output window: tolerance relative to the nominal center of the output window and perpendicular to the mounting plane.

<sup>5</sup> Theoretical limit is >1 MHz; actual performance will be limited by the diode-driver (not included).

<sup>6</sup> Contact integration support for options on air-cooling TEC or waterplate.

# Genesis MX MTM-Series

Multitransverse Mode Visible and Infrared OEM and End-User OPS Laser Systems



Optical Specifications <sup>1</sup>	Genesis MX 561 OEM	Genesis MX 577 OEM	Genesis MX 590 OEM
Wavelength (nm)	561 ±3	577 ±3	590 ±3
Output Power (mW)	2000	3000, 5000	1000, 2000
Spatial Mode		Multimode	
Bandwidth (nm)		<0.5	
Beam Waist Dimensions (mm)			
Horizontal Size <sup>2</sup> (FW, 1/e <sup>2</sup> , mm)	0.17	0.13	0.13
Vertical Size <sup>2</sup> (FW, 1/e <sup>2</sup> , mm)		0.13	
Location <sup>2,3</sup> (mm)		-60	
Beam Divergence			
Horizontal <sup>2</sup> (FW, 1/e <sup>2</sup> , mrad)		<20	
Vertical <sup>2</sup> (FW, 1/e <sup>2</sup> , mrad)		<20	
Collimated Version			
Beam Waist Diameter <sup>2</sup> (1/e <sup>2</sup> , mm)		1.8	
Beam Divergence <sup>2</sup> (1/e <sup>2</sup> , mrad)		1.4	
Beam Waist Location <sup>2</sup> (m)		0.25 ±0.25	
M <sup>2</sup>			
Horizontal		<7	
Vertical		<7	
Pointing Stability <sup>4</sup> (μrad/°C)		<5	
Noise			
10 Hz to 10 MHz (% rms)		<1	
10 Hz to 5 kHz (% peak-to-peak)		<10	
Polarization Ratio		Horizontal, >100:1	
Direct Modulation <sup>5</sup>		Available	
<b>Utility and Environmental Requirements</b>			
Operating Diode Current (A)	<33	<30, <33	<30, <32
Maximum Diode Current (A)	<40	<36, <40	<36, <38
Diode Voltage (V)		1.5 to 2.2	
Cooling Requirements <sup>6</sup>		Active cooling required	
Case Temperature (°C)		25 ±2	
Humidity		Non-condensing	
Dimensions (L x W x H)			
Laser Head		121 x 44 x 65 mm (4.76 x 1.73 x 2.56 in.)	
Weight			
Laser Head (g)		730 ±10	

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Typical value.

<sup>3</sup> Measured from the output face, negative value corresponds to a location inside the head; positive outside.

<sup>4</sup> Measured at the output window: tolerance relative to the nominal center of the output window and perpendicular to the mounting plane.

<sup>5</sup> Theoretical limit is >1 MHz; actual performance will be limited by the diode-driver (not included).

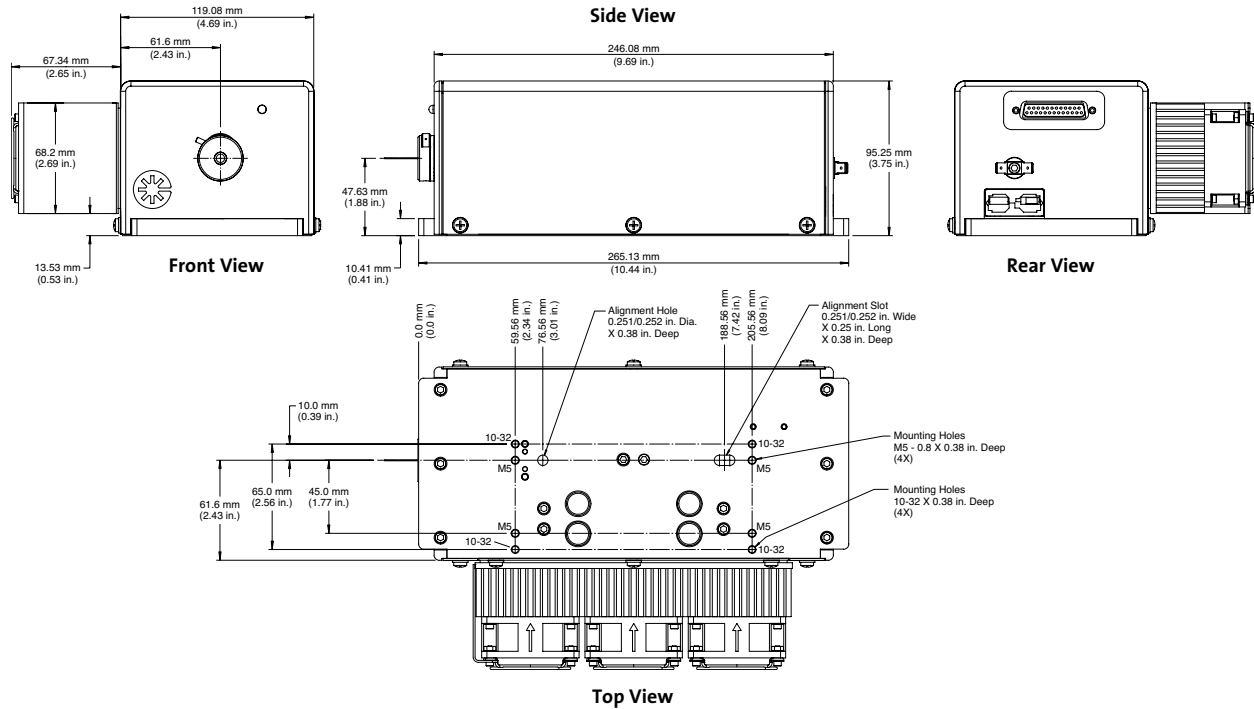
<sup>6</sup> Contact integration support for options on air-cooling TEC or waterplate.

## Genesis MX MTM-Series

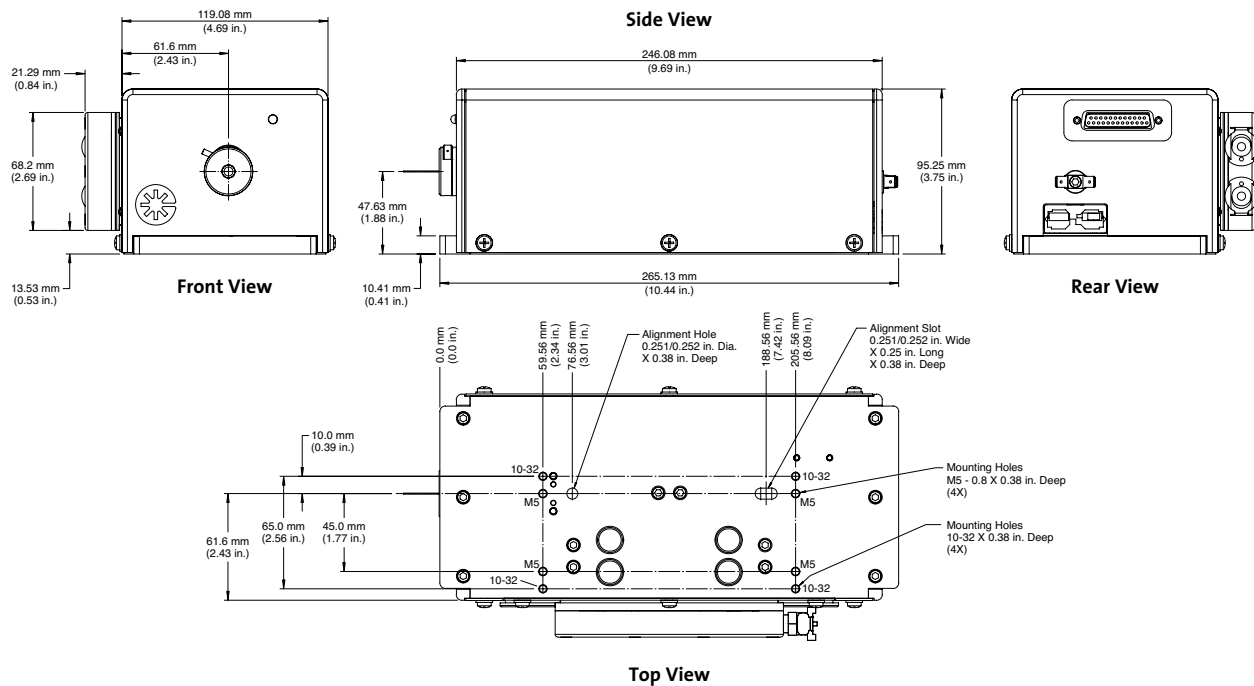
Multitransverse Mode Visible and Infrared OEM and End-User OPS Laser Systems

### Mechanical Specifications

#### Genesis MX MTM-Series (End-User) Air-cooled version



#### Genesis MX MTM-Series (End-User) Water-cooled version

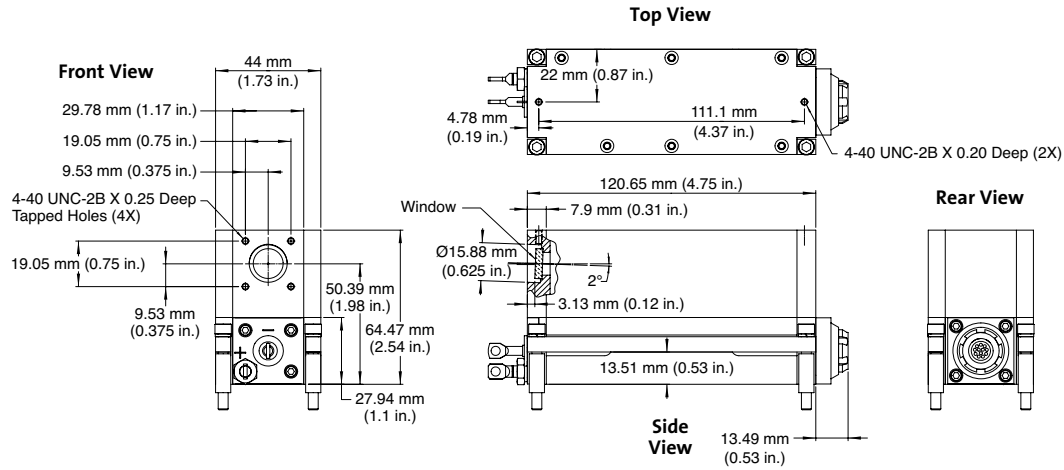


# Genesis MX MTM-Series

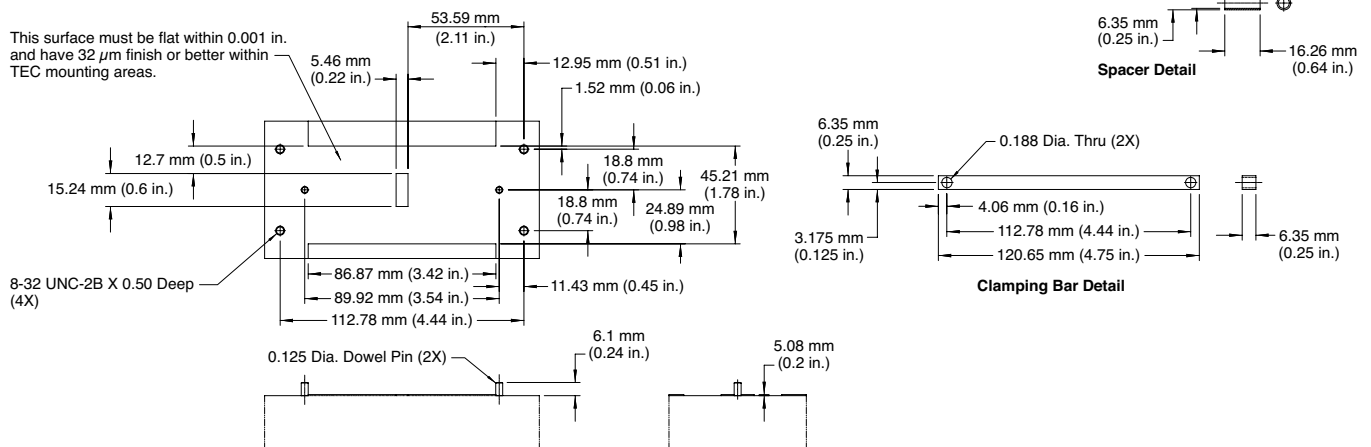
Multitransverse Mode Visible and Infrared OEM and End-User OPS Laser Systems

## Mechanical Specifications

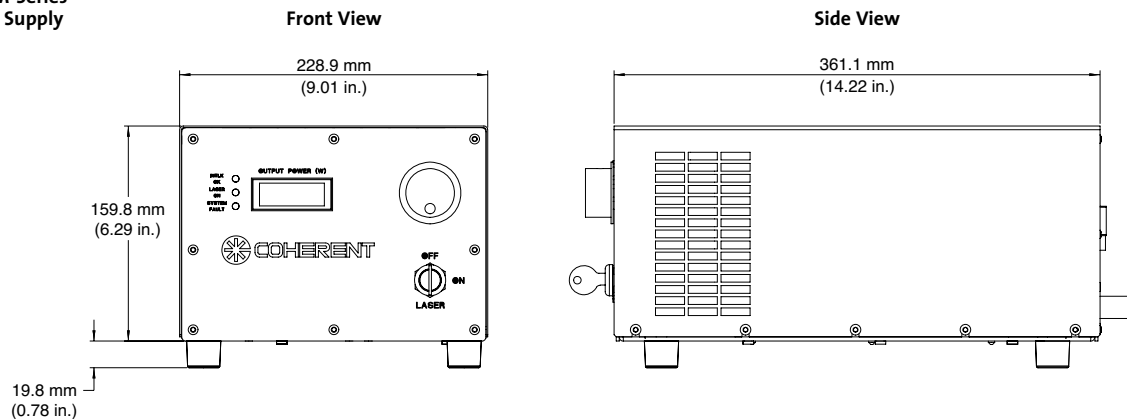
### Genesis MX MTM-Series (OEM)



### Base Plate Requirements



### Genesis MX MTM-Series Benchtop Power Supply

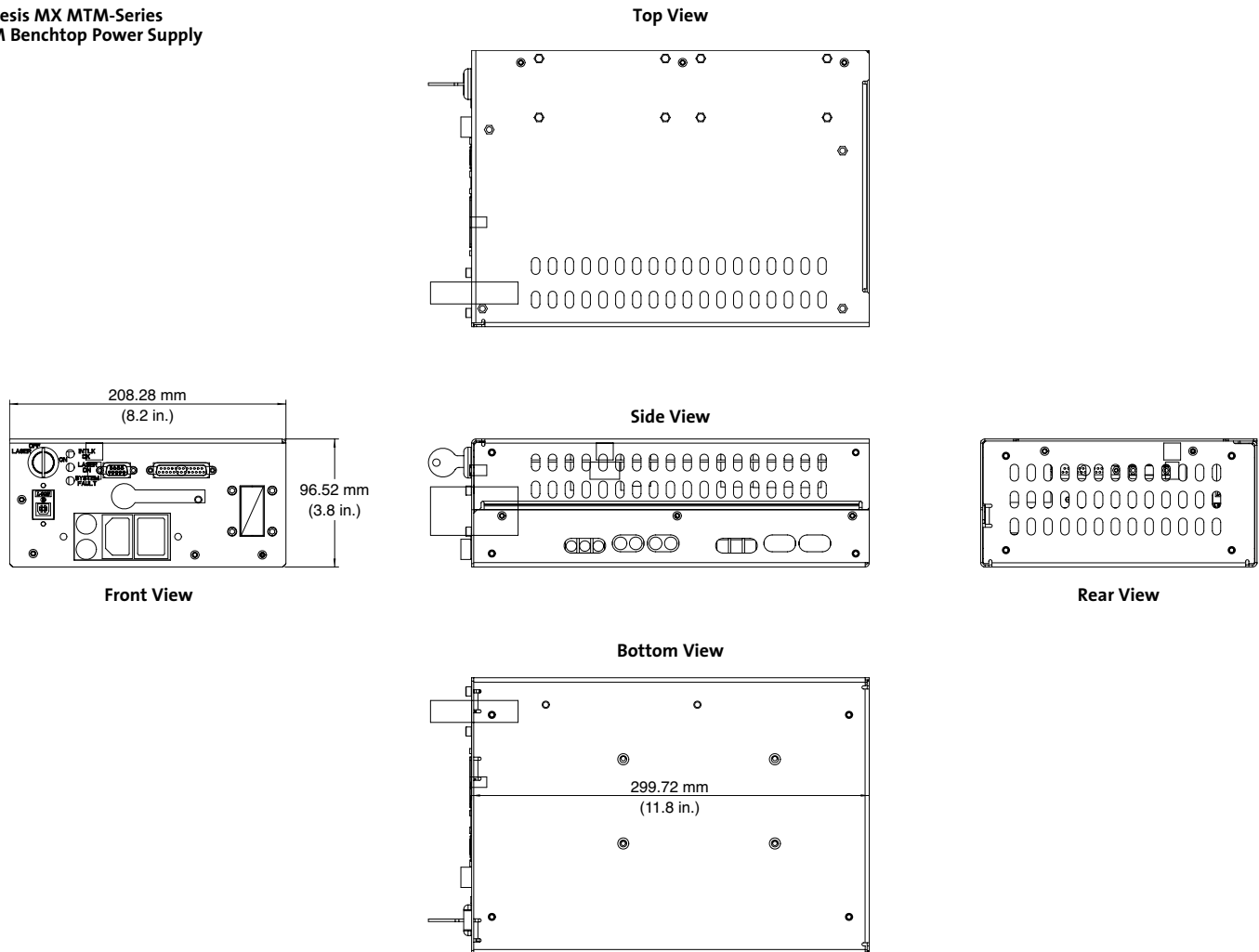


## Genesis MX MTM-Series

Multitransverse Mode Visible and Infrared OEM and End-User OPS Laser Systems

### Mechanical Specifications

#### Genesis MX MTM-Series OEM Benchtop Power Supply



Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all Genesis MX MTM-Series lasers. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.

 ISO 9001 Registered

# Genesis MX STM-Series

TEM<sub>00</sub> Visible OEM and End-User OPS Laser Systems

Applications like Flow Cytometry, Particle Counting, DNA Sequencing and Microscopy are enabled by low noise, visible true CW lasers. The Genesis MX STM-Series provides up to 1W of visible laser light from either OEM or CDRH-compliant end-user systems.

Based on Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology, the Genesis MX STM-Series features variable output power without changing the beam parameters. This, combined with a diffraction-limited beam, low noise and high stability, provides unparalleled laser performance in a convenient package.

Genesis MX STM-Series is the perfect match for customers in need of the highest performing CW laser technology for research and instrumentation in life science and biological applications.

## **Genesis MX STM-Series Features:**

- **Single transverse mode (TEM<sub>00</sub>)**
- **OEM or end-user versions**
- **Air- or water-cooled solutions**

## **Genesis MX STM-Series Applications:**

- **Flow Cytometry**
- **Particle Counting**
- **DNA Sequencing**
- **Microscopy**

Genesis MX STM-Series  
OEM version



**Superior Reliability & Performance**

[www.Coherent.com/GenesisMX\\_STM-Series](http://www.Coherent.com/GenesisMX_STM-Series)



# Genesis MX STM-Series

TEM<sub>00</sub> Visible OEM and End-User OPS Laser Systems



## Optical Specifications<sup>1</sup>

	Genesis MX 460	Genesis MX 480	Genesis MX 488
Wavelength (nm)	460 ±3	480 ±3	488 ±3
FWHM Linewidth (GHz)		<30	
Pulse Format		CW	
Spectral Purity (%)		>99	
Output Power (mW)	500	500	500, 1000
Spatial Mode		TEM <sub>00</sub>	
Beam Quality (M <sup>2</sup> )		<1.1	
Beam Circularity <sup>2</sup>		1.0 ±0.1	
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )		1.0 ±0.1	
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )		0.7 ±0.1	
Beam Waist Location <sup>3</sup> (m)		±0.25	
Beam Pointing Stability <sup>4,5</sup> (μrad/°C)		<5	
Horizontal Beam Position Tolerance <sup>5</sup> (mm)		±1.0	
Vertical Beam Position Tolerance <sup>5</sup> (mm)		±1.0	
Beam Pointing Tolerance <sup>5</sup> (mrad)		<5	
Polarization Ratio		Linear, >100:1	
Polarization Direction		Vertical, ±5°	
Noise (% rms)(10 Hz to 10 MHz)		<0.1	
Power Stability <sup>6</sup> (%) (pk-pk)		±1	
Warm-up Time (minutes)		<10	
CDRH Compliant		Yes	

## Electrical Specifications

Operating Voltage (VAC)	100 to 240
Frequency (Hz)	50 to 60
Power Consumption (W)	500

## Environmental Conditions

Ambient Temperature (°C)	
Operating	10 to 40
Non-Operating	-10 to 60
Relative Humidity <sup>7</sup> (%)	5 to 95
CE Marking	IEC 61010-1/EN 61010-1
Dimensions (L x W x H)	
Laser Head <sup>8</sup>	281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)
Cables (laser head to controller)	2m (6.5 ft.)

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>3</sup> Negative value corresponds to a location inside head.

<sup>4</sup> After 2-hour warm-up.

<sup>5</sup> Measured at the output window.

<sup>6</sup> Measured over 8 hrs.

<sup>7</sup> Non-condensing.

<sup>8</sup> Back connector not included in laser head length dimension.

# Genesis MX STM-Series

TEM<sub>00</sub> Visible OEM and End-User OPS Laser Systems



Optical Specifications <sup>1</sup>	Genesis MX 514	Genesis MX 532	Genesis MX 561	Genesis MX 577
Wavelength (nm)	514 ±3	532 ±3	561 ±3	577 ±3
FWHM Linewidth (GHz)			<30	
Pulse Format			CW	
Spectral Purity (%)			>99	
Output Power (W)	500, 1000	500, 1000	500	500, 1000
Spatial Mode		TEM <sub>00</sub>		
Beam Quality (M <sup>2</sup> )			<1.1	
Beam Circularity <sup>2</sup>			1.0 ±0.1	
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )			1.0 ±0.1	
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )			0.7 ±0.1	
Beam Waist Location <sup>3</sup> (m)			±0.25	
Beam Pointing Stability <sup>4,5</sup> (μrad/°C)			<5	
Horizontal Beam Position Tolerance <sup>5</sup> (mm)			±<1.0	
Vertical Beam Position Tolerance <sup>5</sup> (mm)			±<1.0	
Beam Pointing Tolerance <sup>5</sup> (mrad)			<5	
Polarization Ratio			Linear, >100:1	
Polarization Direction			Vertical, ±5°	
Noise (% rms)(10 Hz to 10 MHz)			<0.1	
Power Stability <sup>6</sup> (%) (pk-pk)			±<1	
Warm-up Time (minutes)			<10	
CDRH Compliant			Yes	
<b>Electrical Specifications</b>				
Operating Voltage (VAC)			100 to 240	
Frequency (Hz)			50 to 60	
Power Consumption (W)			500	
<b>Environmental Conditions</b>				
Ambient Temperature (°C)				
Operating			10 to 40	
Non-Operating			-10 to 60	
Relative Humidity <sup>7</sup> (%)			5 to 95	
CE Marking			IEC 61010-1/EN 61010-1	
Dimensions (L x W x H)				
Laser Head <sup>8</sup>			281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)	
Cables (laser head to controller)			2m (6.5 ft.)	

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>3</sup> Negative value corresponds to a location inside head.

<sup>4</sup> After 2-hour warm-up.

<sup>5</sup> Measured at the output window.

<sup>6</sup> Measured over 8 hrs.

<sup>7</sup> Non-condensing.

<sup>8</sup> Back connector not included in laser head length dimension.

# Genesis MX STM-Series

TEM<sub>00</sub> Visible OEM and End-User OPS Laser Systems



## Optical Specifications<sup>1</sup>

	Genesis MX 460 OEM	Genesis MX 480 OEM	Genesis MX 488 OEM
Wavelength (nm)	460 ±3	480 ±3	488 ±3
Output Power (mW)	500	500	500, 1000
Spatial Mode		TEM <sub>00</sub>	
FWHM Linewidth (GHz)		<30	
Pulse Format		CW	
Beam Circularity		1.0 ±0.1	
Beam Position Tolerance (mm)			
Horizontal		±<1.0	
Vertical		±<1.0	
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )		1.0 ±0.1	
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )		0.7 ±0.1	
Beam Waist Location <sup>2,3</sup> (m)		±0.25	
M <sup>2</sup>			
Horizontal		<1.1	
Vertical		<1.1	
Pointing Stability <sup>4</sup> (μrad/°C)		<5	
Noise			
10 Hz to 10 MHz (% rms)		<0.1	
10 Hz to 5 kHz <sup>5</sup> (% peak-to-peak)		<1	
Polarization Ratio		Horizontal, >100:1	
CDRH Compliance		No	
Warm-up Time (minutes)		<10	
Direct Modulation <sup>6</sup>		Available	

## Utility and Environmental Requirements

Operating Diode Current (A)	<10	<10	<10, <12
Maximum Diode Current (A)	<12	<12	<12, <15
Diode Voltage (V)		1.5 to 2.2	
Cooling Requirements <sup>7</sup>		Active cooling required	
Case Temperature (°C)		25 ±2	
Humidity		Non-condensing	
Dimensions (L x W x H)			
Laser Head		121 x 44 x 65 mm (4.76 x 1.73 x 2.56 in.)	
Weight			
Laser Head (g)		730 ±10	

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Measured at the output of the laser head.

<sup>3</sup> Negative value corresponds to a location within the head.

<sup>4</sup> Measured at the output window: tolerance relative to the nominal center of the output window and perpendicular to the mounting plane.

<sup>5</sup> Over 8 hours.

<sup>6</sup> Theoretical limit is >1 MHz; actual performance will be limited by the diode-driver (not included).

<sup>7</sup> Contact integration support for options on air-cooling TEC or waterplate.

# Genesis MX STM-Series

TEM<sub>00</sub> Visible OEM and End-User OPS Laser Systems



Optical Specifications <sup>1</sup>	Genesis MX 514 OEM	Genesis MX 532 OEM	Genesis MX 561 OEM	Genesis MX 577 OEM
Wavelength (nm)	514 ±3	532 ±3	561 ±3	577 ±3
Output Power (mW)	500, 1000	500, 1000	500	500, 1000
Spatial Mode		TEM <sub>00</sub>		
FWHM Linewidth (GHz)		<30		
Pulse Format		CW		
Beam Circularity		1.0 ±0.1		
Beam Position Tolerance (mm)				
Horizontal		±<1.0		
Vertical		±<1.0		
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )		1.0 ±0.1		
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )		0.7 ±0.1		
Beam Waist Location <sup>2,3</sup> (m)		±0.25		
M <sup>2</sup>				
Horizontal		<1.1		
Vertical		<1.1		
Pointing Stability <sup>4</sup> (μrad/°C)		<5		
Noise				
10 Hz to 10 MHz (% rms)		<0.1		
10 Hz to 5 kHz <sup>5</sup> (% peak-to-peak)		<1		
Polarization Ratio		Horizontal, >100:1		
CDRH Compliance		No		
Warm-up Time (minutes)		<10		
Direct Modulation <sup>6</sup>		Available		
<b>Utility and Environmental Requirements</b>				
Operating Diode Current (A)		<10		
Maximum Diode Current (A)		<12		
Diode Voltage (V)		1.5 to 2.2		
Cooling Requirements <sup>7</sup>		Active cooling required		
Case Temperature (°C)		25 ±2		
Humidity		Non-condensing		
Dimensions (L x W x H)				
Laser Head		121 x 44 x 65 mm (4.76 x 1.73 x 2.56 in.)		
Weight				
Laser Head (g)		730 ±10		

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Measured at the output of the laser head.

<sup>3</sup> Negative value corresponds to a location within the head.

<sup>4</sup> Measured at the output window: tolerance relative to the nominal center of the output window and perpendicular to the mounting plane.

<sup>5</sup> Over 8 hours.

<sup>6</sup> Theoretical limit is >1 MHz; actual performance will be limited by the diode-driver (not included).

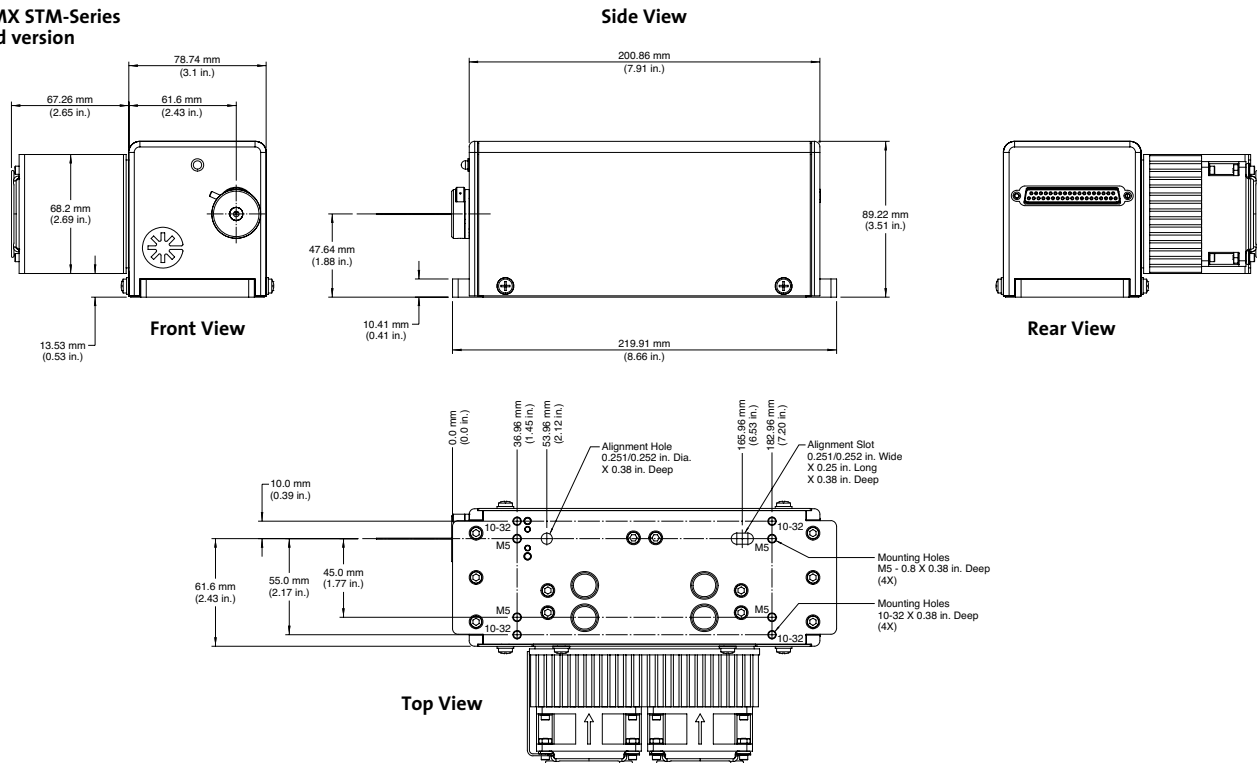
<sup>7</sup> Contact integration support for options on air-cooling TEC or waterplate.

## Genesis MX STM-Series

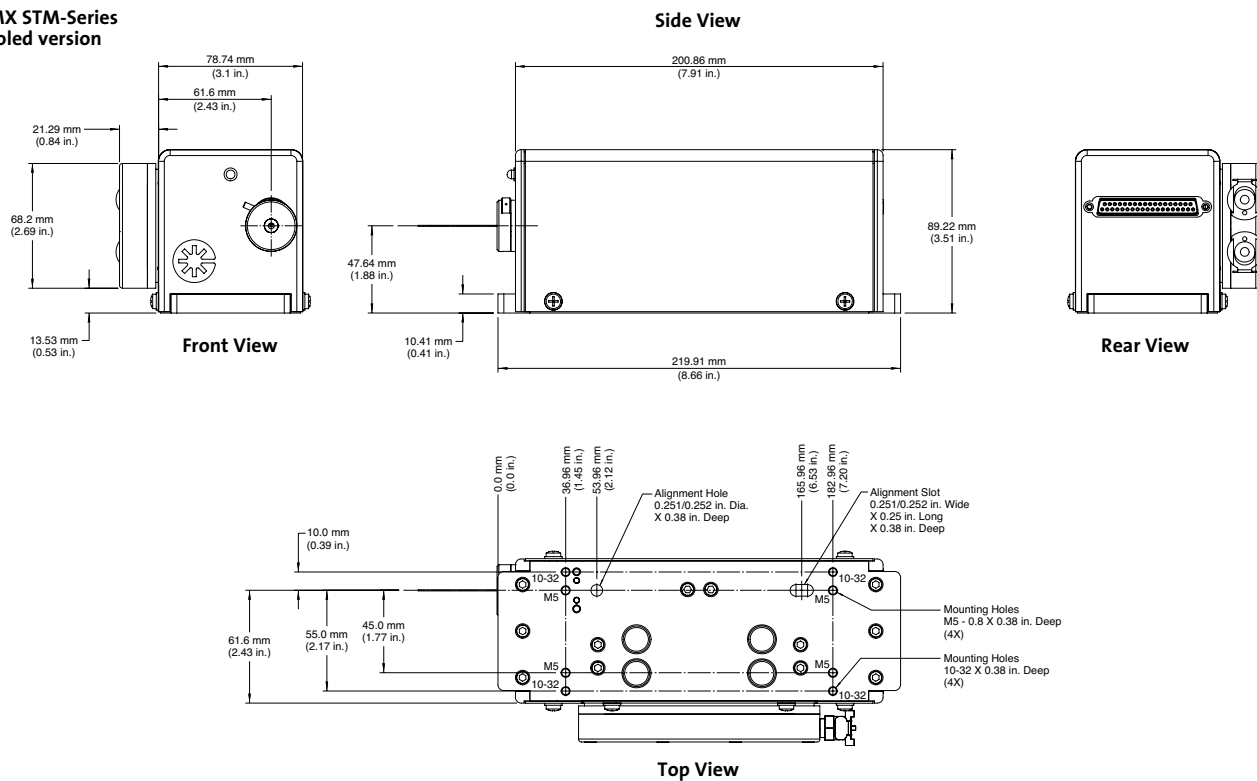
TEM<sub>00</sub> Visible OEM and End-User OPS Laser Systems

### Mechanical Specifications

#### Genesis MX STM-Series Air-cooled version



#### Genesis MX STM-Series Water-cooled version

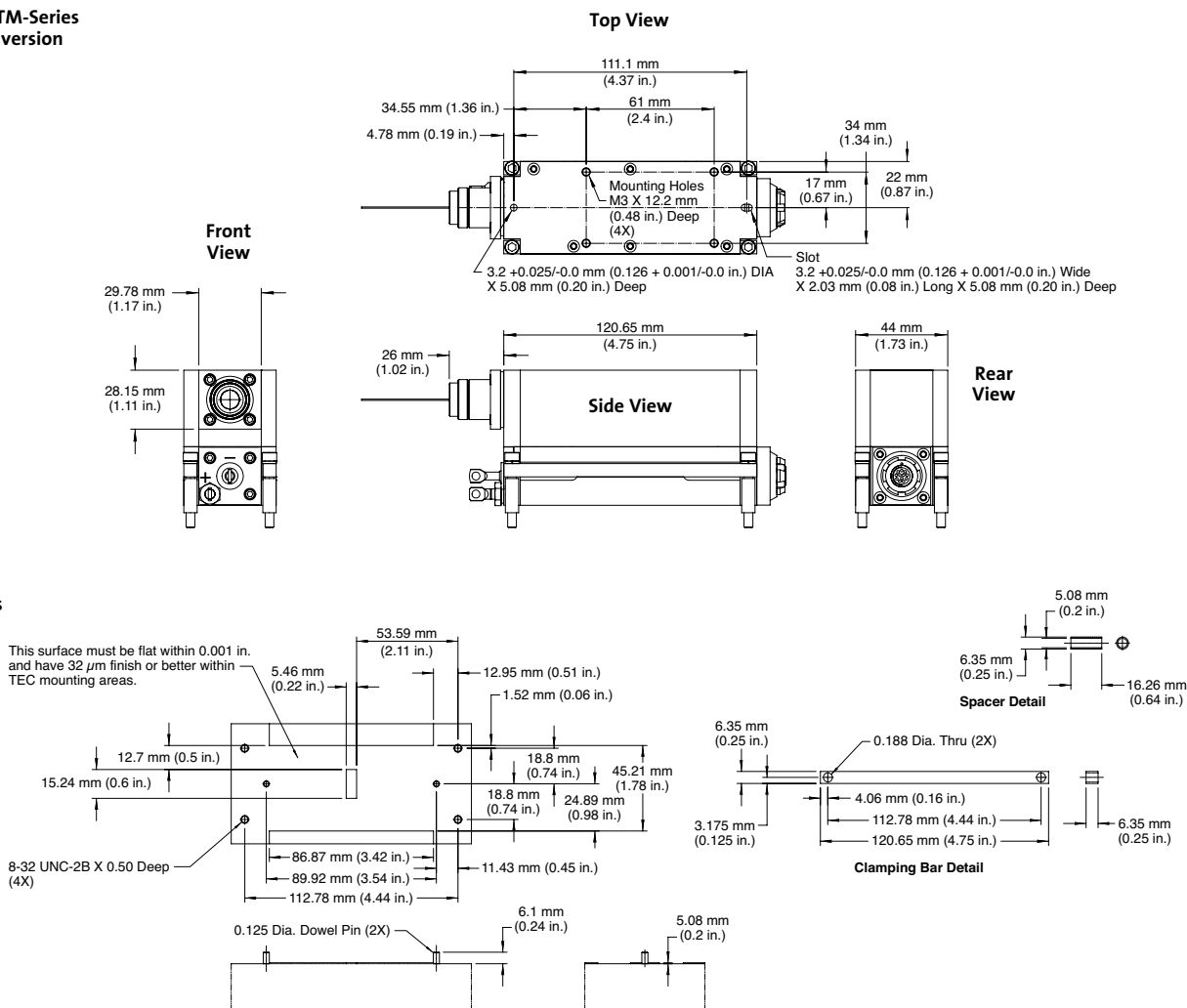


## Genesis MX STM-Series

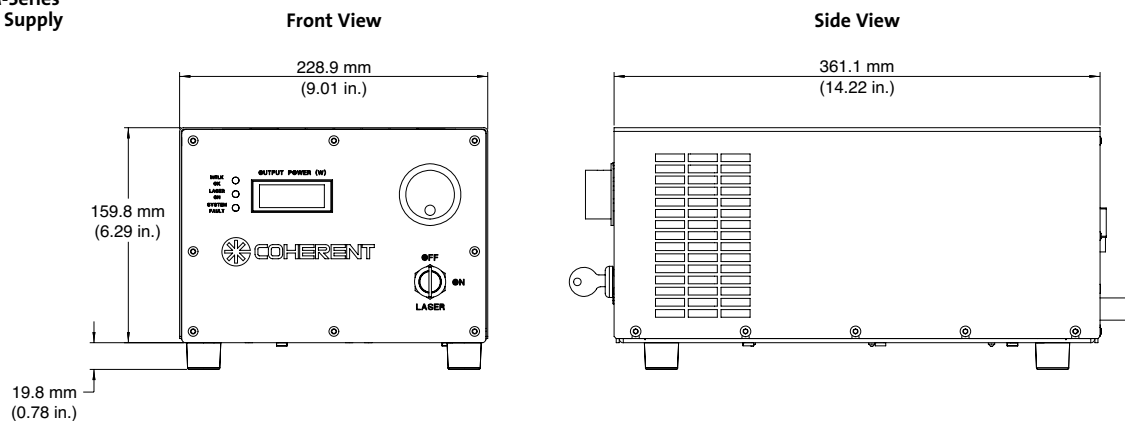
High-Power Optically Pumped Semiconductor Lasers (OPSL)

### Mechanical Specifications

Genesis MX STM-Series  
Water-cooled version



Genesis MX STM-Series  
Benchtop Power Supply



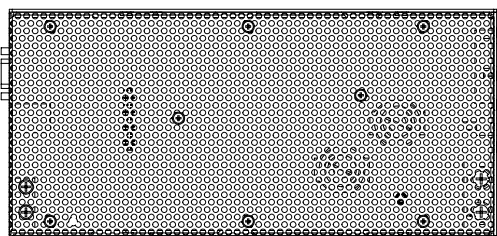
# Genesis MX STM-Series

High-Power Optically Pumped Semiconductor Lasers (OPSL)

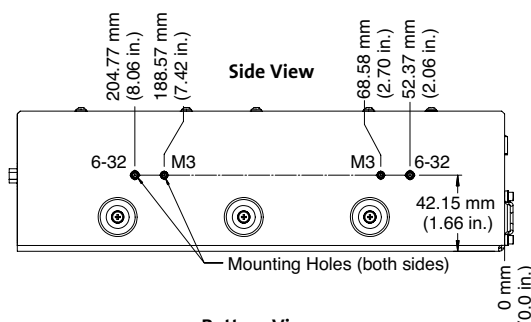
## Mechanical Specifications

Genesis MX STM-Series  
Low Current OEM Controller

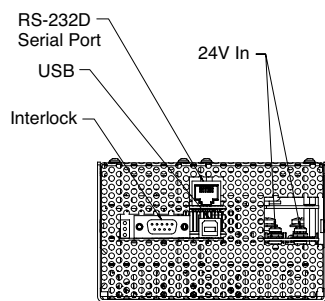
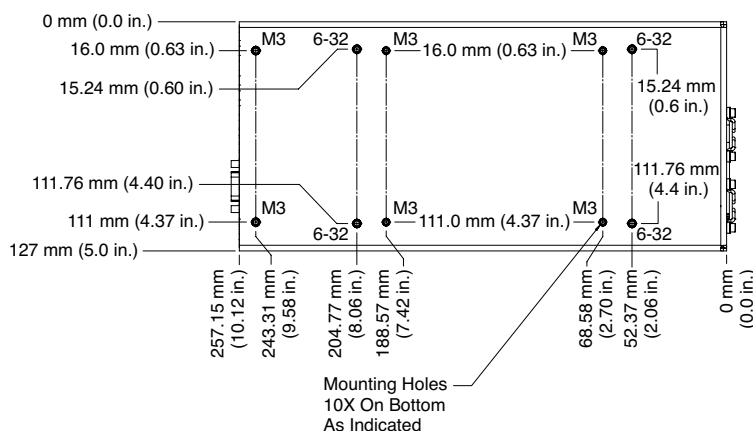
Top View



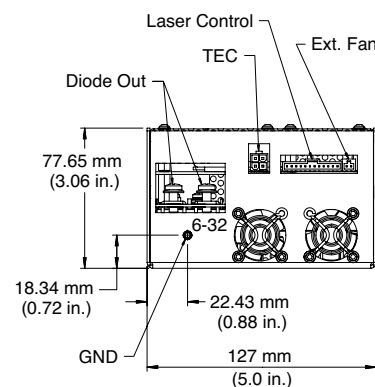
Side View



Bottom View



Front View



Rear View

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all Genesis MX STM-Series lasers. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.

ISO 9001 Registered

# Genesis MX SLM-Series

## Single Frequency Visible OEM and End-User OPS Laser Systems

Applications like Flow Cytometry, Particle Counting, DNA Sequencing and Microscopy are enabled by low noise, visible true CW lasers. The Genesis MX SLM-Series provides up to 1W of visible laser light from either OEM or CDRH-compliant end-user systems.

Based on Coherent's unique Optically Pumped Semiconductor Laser (OPSL) technology, the Genesis MX SLM-Series features single frequency operation for the most demanding applications. This, combined with stable beam parameters across output powers, a diffraction-limited beam, low noise and high stability, provides unparalleled laser performance in a convenient package.

Genesis MX SLM-Series is the perfect match for customers in need of the highest performing CW laser technology for research and instrumentation in life science and biological applications.

### Genesis MX SLM-Series Features:

- All Genesis MX advantages with single-frequency output
- OEM or end-user versions
- Air- or water-cooled solutions

### Genesis MX SLM-Series Applications:

- Flow Cytometry
- Particle Counting
- DNA Sequencing
- Microscopy

Genesis MX SLM-Series  
OEM version



**Superior Reliability & Performance**

[www.Coherent.com/GenesisMX\\_STM-Series](http://www.Coherent.com/GenesisMX_STM-Series)



## Genesis MX SLM-Series

Single Frequency Visible OEM and End-User OPS Laser Systems



### Optical Specifications<sup>1</sup>

	Genesis MX 460	Genesis MX 480	Genesis MX 488
Wavelength (nm)	460 ±3	480 ±3	488 ±3
FWHM Linewidth (MHz)		<5	
Pulse Format		CW	
Spectral Purity (%)		>99	
Output Power (mW)	500	500	500, 1000
Spatial Mode		TEM <sub>00</sub>	
Beam Quality (M <sup>2</sup> )		<1.1	
Beam Circularity <sup>2</sup>		1.0 ±0.1	
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )		1.0 ±0.1	
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )		0.7 ±0.1	
Beam Waist Location <sup>3</sup> (m)		±0.25	
Beam Pointing Stability <sup>4,5</sup> (μrad/°C)		<5	
Horizontal Beam Position Tolerance <sup>5</sup> (mm)		±1.0	
Vertical Beam Position Tolerance <sup>5</sup> (mm)		±1.0	
Beam Pointing Tolerance <sup>5</sup> (mrad)		<5	
Polarization Ratio		Linear, >100:1	
Polarization Direction		Vertical, ±5°	
Noise (% rms)(10 Hz to 10 MHz)		<0.1	
Power Stability <sup>6</sup> (%) (pk-pk)		±1	
Warm-up Time (minutes)		<10	
CDRH Compliant		Yes	

### Electrical Specifications

Operating Voltage (VAC)	100 to 240
Frequency (Hz)	50 to 60
Power Consumption (W)	500

### Environmental Conditions

Ambient Temperature (°C)	
Operating	10 to 40
Non-Operating	-10 to 60
Relative Humidity <sup>7</sup> (%)	5 to 95
CE Marking	IEC 61010-1/EN 61010-1
Dimensions (L x W x H)	
Laser Head <sup>8</sup>	281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)
Cables (laser head to controller)	2m (6.5 ft.)

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>3</sup> Negative value corresponds to a location inside head.

<sup>4</sup> After 2-hour warm-up.

<sup>5</sup> Measured at the output window.

<sup>6</sup> Measured over 8 hrs.

<sup>7</sup> Non-condensing.

<sup>8</sup> Back connector not included in laser head length dimension.

## Genesis MX SLM-Series

Single Frequency Visible OEM and End-User OPS Laser Systems

Optical Specifications <sup>1</sup>	Genesis MX 514	Genesis MX 532	Genesis MX 561	Genesis MX 577	Genesis MX 590
Wavelength (nm)	514 ±3	532 ±3	561 ±3	577 ±3	590 ±3
FWHM Linewidth (MHz)			<5		
Pulse Format			CW		
Spectral Purity (%)			>99		
Output Power (mW)	500, 1000	500, 1000	500	500, 1000	500, 1000
Spatial Mode			TEM <sub>00</sub>		
Beam Quality (M <sup>2</sup> )			<1.1		
Beam Circularity <sup>2</sup>			1.0 ±0.1		
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )			1.0 ±0.1		
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )			0.7 ±0.1		
Beam Waist Location <sup>3</sup> (m)			±0.25		
Beam Pointing Stability <sup>4,5</sup> (μrad/°C)			<5		
Horizontal Beam Position Tolerance <sup>5</sup> (mm)			±<1.0		
Vertical Beam Position Tolerance <sup>5</sup> (mm)			±<1.0		
Beam Pointing Tolerance <sup>5</sup> (mrad)			<5		
Polarization Ratio			Linear, >100:1		
Polarization Direction			Vertical, ±5°		
Noise (% rms)(10 Hz to 10 MHz)			<0.1		
Power Stability <sup>6</sup> (%) (pk-pk)			±<1		
Warm-up Time (minutes)			<10		
CDRH Compliant			Yes		
<b>Electrical Specifications</b>					
Operating Voltage (VAC)			100 to 240		
Frequency (Hz)			50 to 60		
Power Consumption (W)			500		
<b>Environmental Conditions</b>					
Ambient Temperature (°C)					
Operating			10 to 40 water-cooled, 10 to 35 air-cooled		
Non-Operating			-10 to 60		
Relative Humidity <sup>7</sup> (%)			5 to 95		
CE Marking			IEC 61010-1/EN 61010-1		
Dimensions (L x W x H)					
Laser Head <sup>8</sup>			281 x 156 x 85 mm (11.06 x 6.14 x 3.35 in.)		
Cables (laser head to controller)			2m (6.5 ft.)		

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Circularity defined as vertical diameter divided by horizontal diameter.

<sup>3</sup> Negative value corresponds to a location inside head.

<sup>4</sup> After 2-hour warm-up.

<sup>5</sup> Measured at the output window.

<sup>6</sup> Measured over 8 hrs.

<sup>7</sup> Non-condensing.

<sup>8</sup> Back connector not included in laser head length dimension.

# Genesis MX SLM-Series

Single Frequency Visible OEM and End-User OPS Laser Systems



Optical Specifications <sup>1</sup>	Genesis MX 460 OEM	Genesis MX 480 OEM	Genesis MX 488 OEM
Wavelength (nm)	460 ±3	480 ±3	488 ±3
Output Power (mW)	500	500	500, 1000
Spatial Mode		TEM <sub>00</sub>	
FWHM Linewidth (MHz)		<5	
Pulse Format		CW	
Beam Circularity		1.0 ±0.1	
Beam Position Tolerance (mm)			
Horizontal		±1.0	
Vertical		±1.0	
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )		1.0 ±0.1	
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )		0.7 ±0.1	
Beam Waist Location <sup>2,3</sup> (m)		±0.25	
M <sup>2</sup>			
Horizontal		<1.1	
Vertical		<1.1	
Pointing Stability <sup>4</sup> (μrad/°C)		<5	
Noise			
10 Hz to 10 MHz (% rms)		<0.1	
10 Hz to 5 kHz <sup>5</sup> (% peak-to-peak)		<1	
Polarization Ratio		Horizontal, >100:1	
CDRH Compliance		No	
Warm-up Time (minutes)		<10	
Direct Modulation <sup>6</sup>		Available	
<b>Utility and Environmental Requirements</b>			
Operating Diode Current (A)	<10	<10	<10, <12
Maximum Diode Current (A)	<12	<12	<12, <15
Diode Voltage (V)		1.5 to 2.2	
Cooling Requirements <sup>7</sup>		Active cooling required	
Case Temperature (°C)		25 ±2	
Humidity		Non-condensing	
Dimensions (L x W x H)			
Laser Head		121 x 44 x 65 mm (4.76 x 1.73 x 2.56 in.)	
Weight			
Laser Head (g)		730 ±10	

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Measured at the output of the laser head.

<sup>3</sup> Negative value corresponds to a location within the head.

<sup>4</sup> Measured at the output window: tolerance relative to the nominal center of the output window and perpendicular to the mounting plane.

<sup>5</sup> Over 8 hours.

<sup>6</sup> Theoretical limit is >1 MHz; actual performance will be limited by the diode-driver (not included).

<sup>7</sup> Contact integration support for options on air-cooling TEC or waterplate.

## Genesis MX SLM-Series

Single Frequency Visible OEM and End-User OPS Laser Systems

Optical Specifications <sup>1</sup>	Genesis MX 514 OEM	Genesis MX 532 OEM	Genesis MX 561 OEM	Genesis MX 577 OEM	Genesis MX 590 OEM
Wavelength (nm)	514 ±3	532 ±3	561 ±3	577 ±3	590 ±3
Output Power (mW)	500, 1000	500, 1000	500	500, 1000	500, 1000
Spatial Mode			TEM <sub>00</sub>		
FWHM Linewidth (MHz)			<5		
Pulse Format			CW		
Beam Circularity			1.0 ±0.1		
Beam Position Tolerance (mm)					
Horizontal			±1.0		
Vertical			±1.0		
Beam Waist Diameter (mm)(FW, 1/e <sup>2</sup> )			1.0 ±0.1		
Beam Divergence (mrad)(FW, 1/e <sup>2</sup> )			0.7 ±0.1		
Beam Waist Location <sup>2,3</sup> (m)			±0.25		
M <sup>2</sup>					
Horizontal			<1.1		
Vertical			<1.1		
Pointing Stability <sup>4</sup> (μrad/°C)			<5		
Noise					
10 Hz to 10 MHz (% rms)			<0.1		
10 Hz to 5 kHz <sup>5</sup> (% peak-to-peak)			<1		
Polarization Ratio			Horizontal, >100:1		
CDRH Compliance			No		
Warm-up Time (minutes)			<10		
Direct Modulation <sup>6</sup>			Available		
<b>Utility and Environmental Requirements</b>					
Operating Diode Current (A)			<10		
Maximum Diode Current (A)			<12		
Diode Voltage (V)			1.5 to 2.2		
Cooling Requirements <sup>7</sup>			Active cooling required		
Case Temperature (°C)			25 ±2		
Humidity			Non-condensing		
Dimensions (L x W x H)					
Laser Head			121 x 44 x 65 mm (4.76 x 1.73 x 2.56 in.)		
Weight					
Laser Head (g)			730 ±10		

<sup>1</sup> Optical parameters measured at the output plane of the laser head. Unless noted all parameters valid for the lifetime of the unit.

<sup>2</sup> Measured at the output of the laser head.

<sup>3</sup> Negative value corresponds to a location within the head.

<sup>4</sup> Measured at the output window: tolerance relative to the nominal center of the output window and perpendicular to the mounting plane.

<sup>5</sup> Over 8 hours.

<sup>6</sup> Theoretical limit is >1 MHz; actual performance will be limited by the diode-driver (not included).

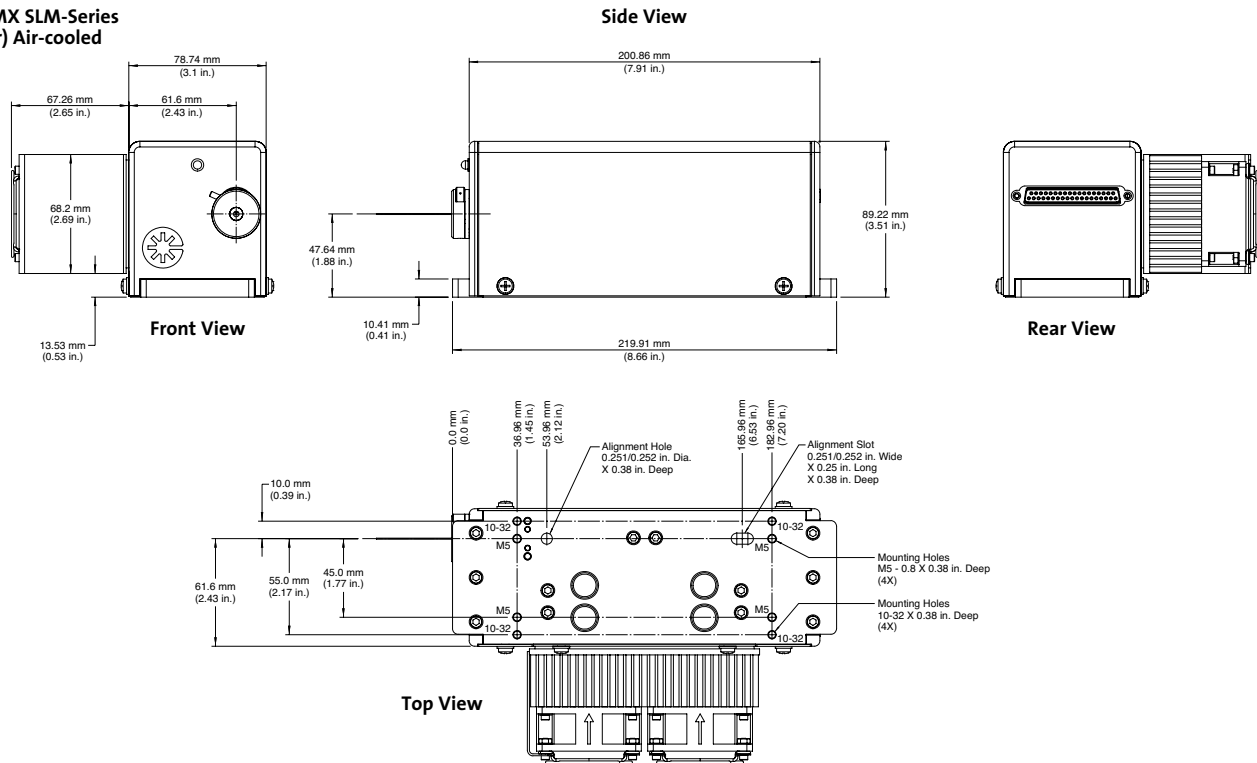
<sup>7</sup> Contact integration support for options on air-cooling TEC or waterplate.

## Genesis MX SLM-Series

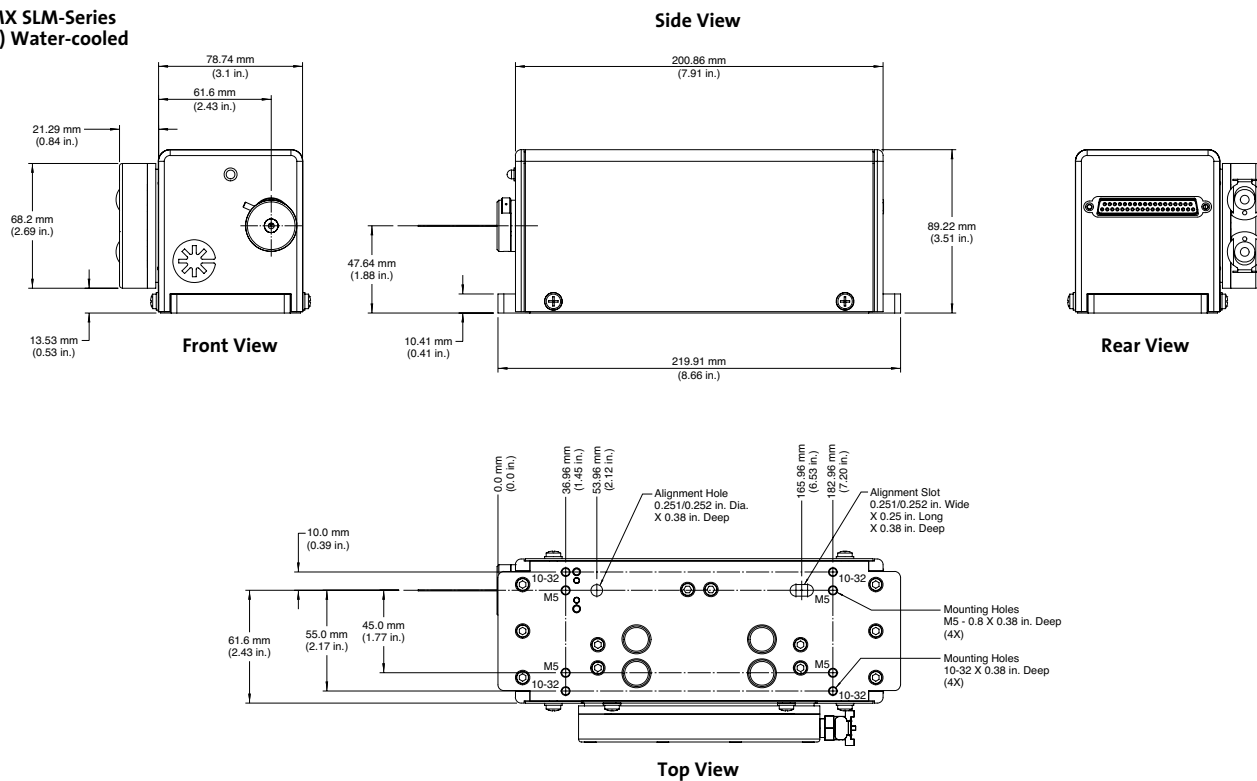
Single Frequency Visible OEM and End-User OPS Laser Systems

### Mechanical Specifications

#### Genesis MX SLM-Series (End-User) Air-cooled version



#### Genesis MX SLM-Series (End-User) Water-cooled version

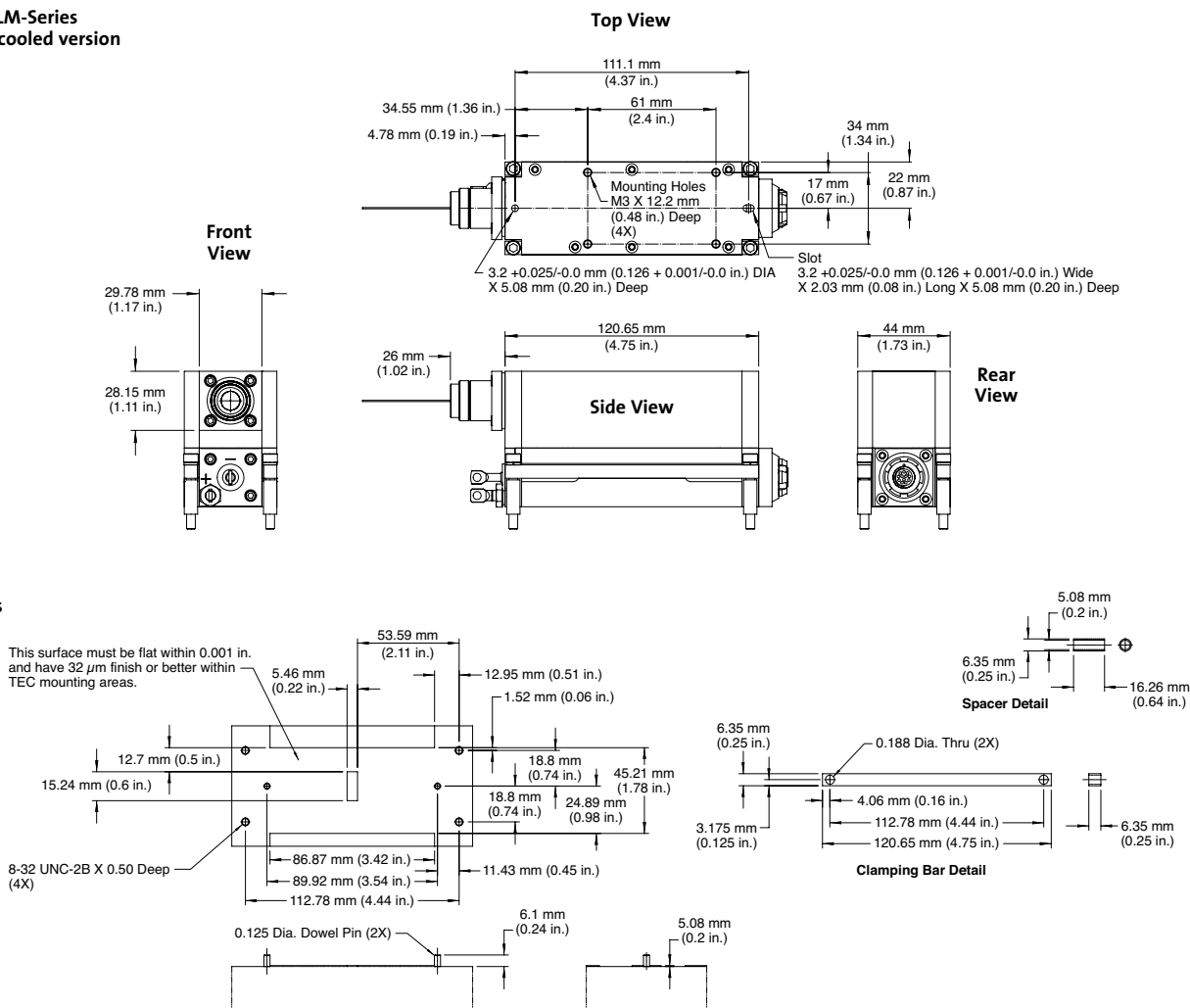


# Genesis MX SLM-Series

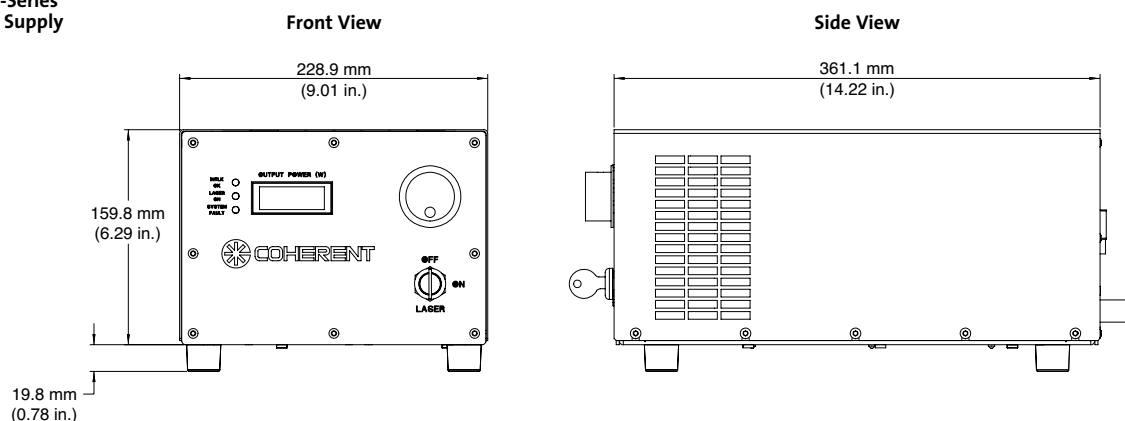
Single Frequency Visible OEM and End-User OPS Laser Systems

## Mechanical Specifications

Genesis MX SLM-Series  
(OEM) Water-cooled version



Genesis MX SLM-Series  
Benchtop Power Supply



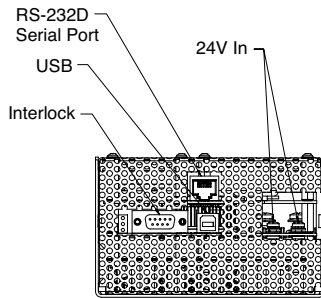
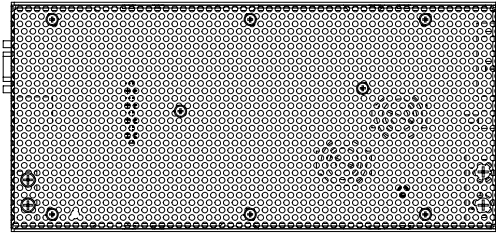
## Genesis MX SLM-Series

Single Frequency Visible OEM and End-User OPS Laser Systems

### Mechanical Specifications

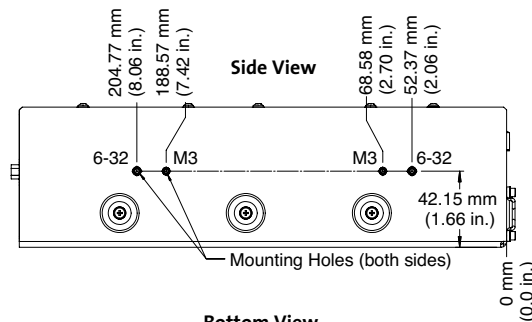
#### Genesis MX SLM-Series Low Current OEM Controller

Top View

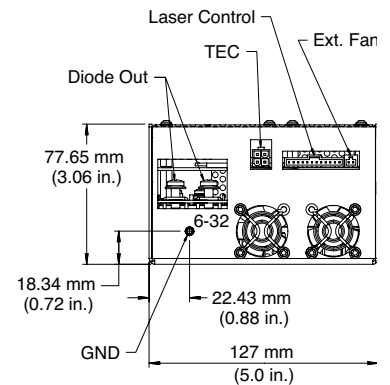
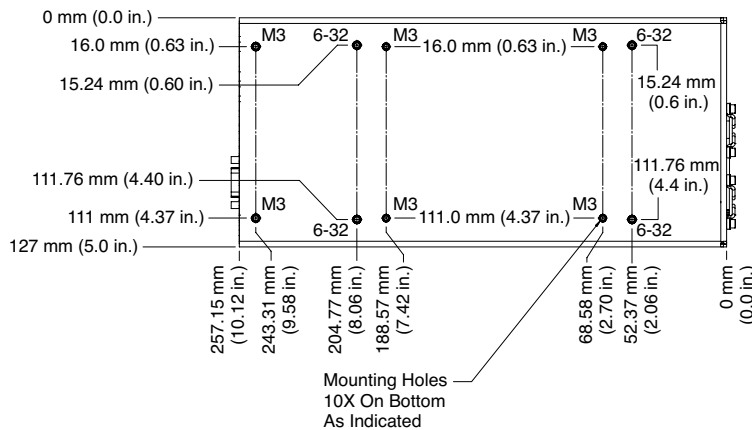


Front View

Side View



Bottom View



Rear View

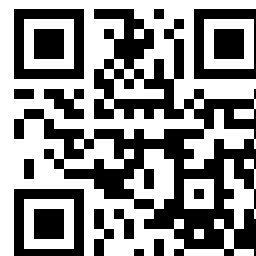
Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

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ISO 9001 Registered

# Femtosecond Lasers from Coherent.



## Chameleon Family: Tunable Femtosecond Hands-Free Lasers and OPOs

### Ultra II High Power Ti:Sapphire

- >3.5W
- 680 nm to 1080 nm
- 140 fs pulse duration

### Discovery High Power Dual Output

- >1.4W
- 680 nm to 1300 nm
- 100 fs with GDD precompensation
- Second high power output at 1040 nm



### Vision and Vision-S With Dispersion Precompensation

- >3W
- 680 nm to 1080 nm
- 140 fs or 75 fs pulse duration

### MPX and Compact OPO-Vis Wavelength Extension

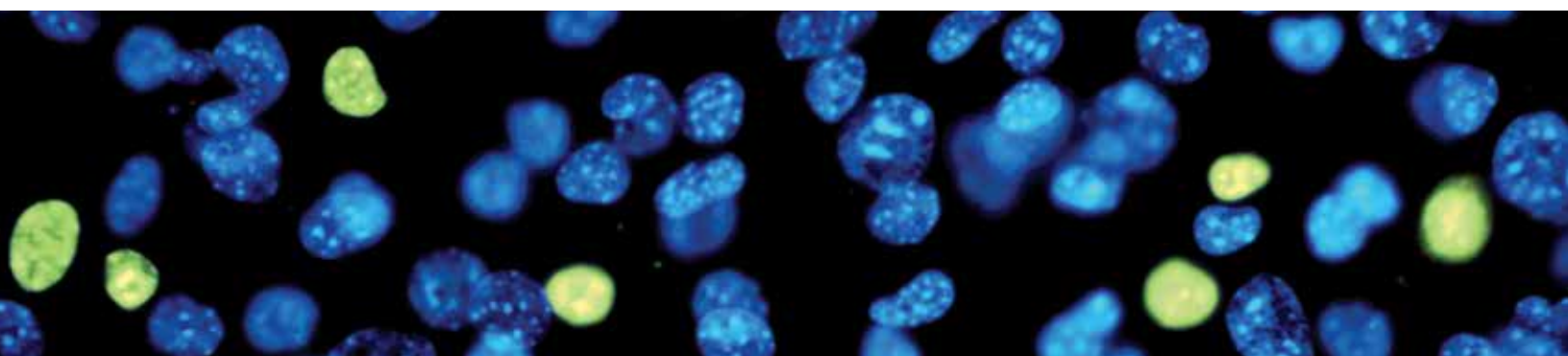
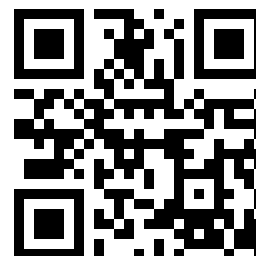
- Wavelength range from 340 nm to 4000 nm
- Dual outputs with independent tuning
- 130 fs to 200 fs pulse duration with GDD precompensation

[www.Coherent.com/Chameleon](http://www.Coherent.com/Chameleon)



# The Most Complete Portfolio for Life Sciences.

**Discover More  
Solutions:**



## **Compass 115M**

Continuous wave laser with best performance-to-price ratio featuring excellent laser

## **CUBE**

Complete, high-performance, full-feature diode laser system at an attractive price



## **Miniature Diode Modules**

Family of miniature diode laser modules that produce high-quality elliptical or circular beams. Also available in line generators



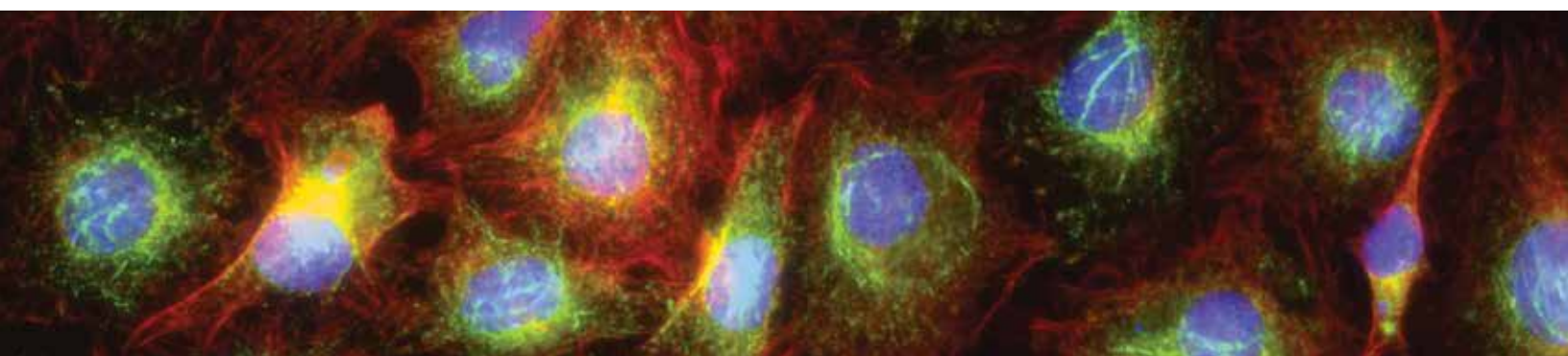
## **Verdi G**

Family of OPSEL lasers with powers up to 20W at 532 nm



# Coherent Laser Accessories.

**Discover More  
Solutions:**



**OBIS LX/LS Single  
Laser Remote**



**OBIS LX/LS  
Laser Box**



**OBIS LX/LS  
Scientific Remote**



**OBIS LX/LS  
6-Laser Remote**



**OBIS LX/LS  
Heat Sink**



**Sapphire  
Driver Unit**



# OBIS LX/LS Scientific Remote

Laser Remote and Power Supply for up to Six Lasers

OBIS LX and OBIS LS laser products come with a variety of accessories to support your application needs.

The OBIS Scientific Remote for OBIS LS and OBIS LX offers all the features from the laser in a convenient CDRH-compliant interface with a touch-screen and internal power supply for up to six lasers.

As with all OBIS LX and OBIS LS lasers, the laser itself offers a stand-alone all-in-one laser solution. The OBIS laser comes with a Power Connection, USB Connection, Fan Connection and a SDR-type Connection for laser control I/O. All of these are on the back panel of every OBIS LX/LS laser.

To simplify integration the OBIS Scientific Remote connects to the single SDR-type connector for power, signals and communication. The OBIS Scientific Remote then brings all of these features to controls and connectors on the Remotes front panel.

OBIS Scientific Remote offers a convenient handle to angle the unit for easier display.

**Figure 1:** OBIS LX/LS Scientific Remote for up to six lasers. Lasers sold separately.



## **OBIS LX/LS Scientific Remote Features:**

- Complete remote control of up to six OBIS lasers
- Touchscreen interface with audio
- Modulation inputs for analog and digital for six lasers
- USB, RS-232 and Ethernet for additional control from host computer
- OBIS connection software for PC
- Single SDR connection to each laser
- Internal power supply remote and six lasers
- Laser safety features such as key switch and interlock

## **OBIS LX/LS Scientific Remote Applications:**

- Laboratories needing CDRH features
- Applications wanting a simple Analog or Digital inputs to control the laser
- Applications wanting laser control at a remote location away from the laser

[www.Coherent.com/OBISHeatSink](http://www.Coherent.com/OBISHeatSink)

## OBIS LX/LS Scientific Remote

Laser Remote and Power Supply for up to Six Lasers

### System Specifications

### OBIS LS/LX Scientific Remote

Touchscreen Display Size	108 mm (4.3 in.) diagonal
Touchscreen Display Resolution, Type	480 x 272 pixel, QVGA, TFT, 24-bit color
Touchscreen Display Mode <sup>1</sup>	Resistive Touchscreen
Audio	Yes
Internal Power Supply	Yes
OBIS Lasers that can be connected	1 to 6 lasers with power to optional 1 to 6 heat sink cooling fans
Host Computer Remote Control via USB <sup>2</sup>	USB 2.0, Mini B
Host Computer Remote Control via RS-232 <sup>2</sup>	RS-232 115.2K, 8N1
Host Computer Remote via Ethernet <sup>2</sup>	Ethernet 10/100 (Mb) RJ45
Carry Handle and Stand	3-Position
Interlock	Yes, included with shorting wire
Laser Status Indicators	Yes, Individual LED for each laser
Analog Modulation Input	SMB, 2000 Ohm, 0 to 5V
Digital Modulation Input <sup>3</sup>	SMB, 50 Ohm, 0 to 3V
Warm-up Time (minutes)(from cold start)	<2
OBIS Connection Software <sup>2</sup>	Included on USB drive with user manual

### Utility and Environmental Requirements

Power Consumption (W)(typical)	5 (without lasers)
Power Consumption (W)(maximum)	110 (with 6 lasers)
Internal Cooling Fan	Yes
Power Input - Universal	IEC-320
Power Cord (USA)	2.4m (8 ft.)
Operating Condition <sup>4</sup> (°C)	0 to 50
Non-operating Condition <sup>4</sup> (°C)	-10 to +70
Shock Tolerance (6 ms)	20 g
Operating Voltage	90 to 264 VAC, 47 to 63 Hz
Dimensions (L x W x H)	180 x 293.5 x 104.4 mm (7.09 x 11.55 x 4.11 in.)
Weight	1.75 kg (3.86 lbs.)
Weight, Laser-to-Remote Cable (optional)	0.1 kg for 1 meter (0.25 kg for 3 meter)
Part Number for OBIS Scientific Remote	1234465
Part Number for OBIS Scientific Remote with Six Laser-to-Remote SDR Cables Included (1m each)	1234466
Part Number for OBIS LX/LS SDR-Type Cable from Laser to Remote	
1-meter	1179451
3-meter	1179858
0.3-meter	1197523

<sup>1</sup> Resistive touchscreen will work with gloves. This is a pressure sensitive touchscreen - not capacitive.

<sup>2</sup> Host computer not provided. RS-232 and USB cable not provided. Software operates on Windows 7.

<sup>3</sup> Digital modulation can be driven up to 5V.

<sup>4</sup> Non-condensing.

### Screen Shot



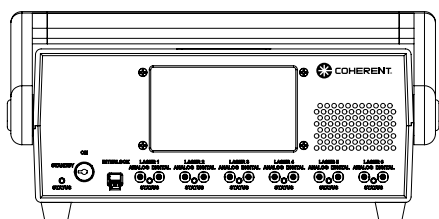
# OBIS LX/LS Scientific Remote

Laser Remote and Power Supply for up to Six Lasers

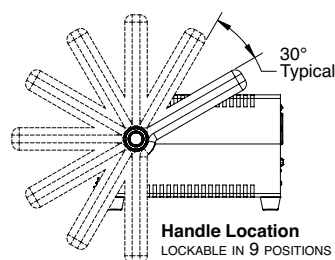
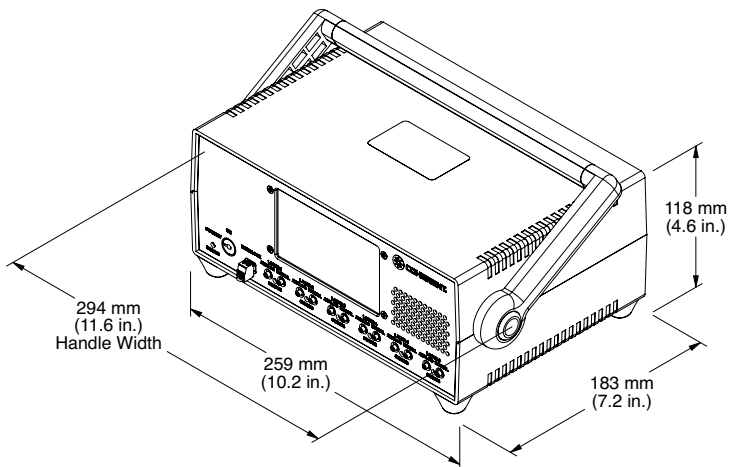
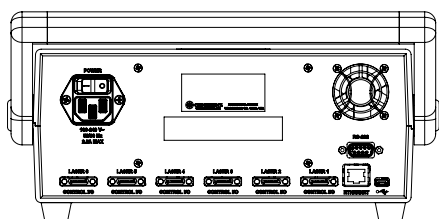
## Mechanical Specifications

### OBIS LX/LS Scientific Remote

Front View



Rear View



Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all OBIS LS/LX Scientific Remotes. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.





# OBIS LX/LS Single Laser Remote

Full Feature Laser Remote and Power Supply

OBIS LX and OBIS LS laser products come with a variety of accessories to support your application needs.

The OBIS Single Laser Remote for OBIS LS and OBIS LX offers all the features from the laser in a convenient CDRH-compliant interface.

As with all OBIS LX and OBIS LS lasers, the laser itself offers a stand-alone all-in-one laser solution. The OBIS laser comes with a Power Connection, USB Connection, Fan Connection and a SDR-type Connection for laser control I/O. All of these are on the back panel of every OBIS LX/LS laser.

To simplify integration the OBIS Single Laser Remote connects to the single SDR-type connector for power, signals and communication. The OBIS Single Laser Remote then brings all of these features to controls and connectors on the Remotes front and back panel.

OBIS Single Laser Remotes can even be stacked together with the provided mounting hardware for applications using multiple OBIS LX/LS lasers.



**Superior Reliability & Performance**

## **OBIS LX/LS Single Laser Remote Features:**

- Compact size
- Laser safety features (CDRH) such as key switch and interlock
- Laser status indicators
- Full input and output connections for control, analog modulation and digital modulation
- Compact power supply for single laser included
- Brackets for mounting and stacking included

## **OBIS LX/LS Single Laser Remote Applications:**

- Laboratories needing CDRH features
- Applications wanting a simple Analog or Digital inputs to control the laser
- Applications wanting laser control at a remote location away from the laser

[www.Coherent.com/OBISSingleLaserRemote](http://www.Coherent.com/OBISSingleLaserRemote)

# OBIS LX/LS Single Laser Remote

Full Feature Laser Remote and Power Supply



## System Specifications

## OBIS LX/LS Single Laser Remote

Host Computer Remote Control via USB <sup>1</sup>	USB 2.0, Mini B
Host Computer Remote Control via RS-232 <sup>1</sup>	RS-232 115.2K, 8N1
Interlock	Yes, included with shorting wire
Laser Status Indicators	Yes
Analog Modulation Input	SMB, 50 Ohm OR 2KOhm, 0 to 5V
Digital Modulation Input <sup>2</sup>	SMB, 50 Ohm, 0 to 3V
Warm-up Time (minutes)(from cold start)	<2
OBIS Connection Software <sup>3</sup>	Included on USB drive with user manual
Power Consumption (W)(typical)	1 (laser not included)
Power Consumption (W)(maximum)	2 (laser not included)
Power Input	Universal IEC-320
Power Cord (USA)	2.4m (8 ft.)
Operating Condition <sup>4</sup> (°C)	0 to 40
Non-operating Condition <sup>4</sup> (°C)	-10 to +70
Shock Tolerance (6 ms)	20 g
Operating Voltage	90 to 264 VAC, 47 to 63 Hz
Dimensions (L x W x H)	105 x 68 x 36 mm (4.1 x 2.7 x 1.4 in.)
Weight	
OBIS Single Laser Remote	0.23 kg (0.5 lbs.)
Power Supply (included)	0.23 kg (0.5 lbs.)
Part Number for OBIS Single Laser Remote	1173961
Part Number for OBIS LX/LS SDR-Type Cable from Laser to Remote	
1-meter	1179451
3-meter	1179858
0.3-meter	1197523
Part Number for OBIS Power Supply, 12VDC	1184491

<sup>1</sup> Host computer not provided. USB cable provided. RS-232 cable not provided.

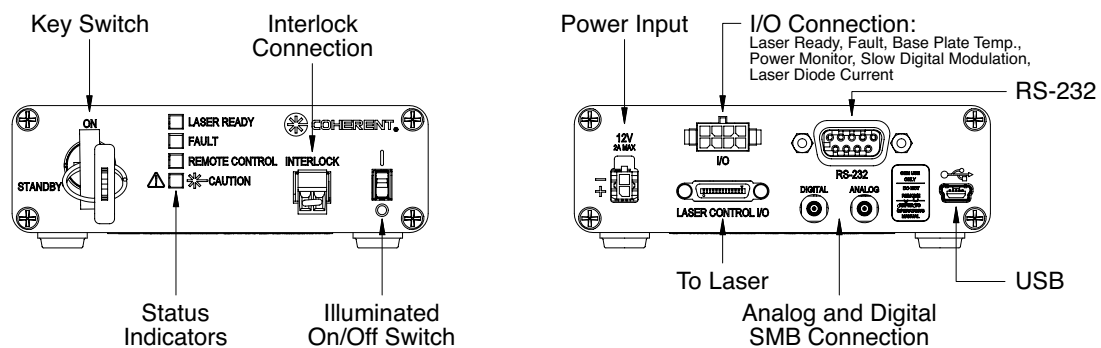
<sup>2</sup> Digital modulation can be driven up to 5V.

<sup>3</sup> Software operates on Windows 7.

<sup>4</sup> Non-condensing.

## OBIS LX/LS Single Laser Remote

### Controls

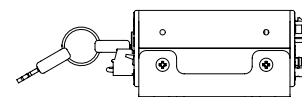
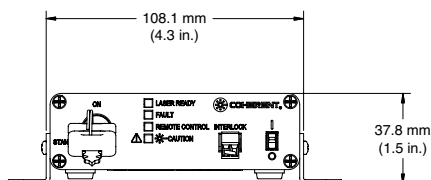
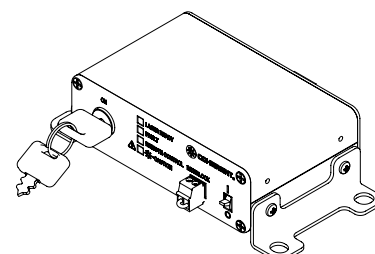
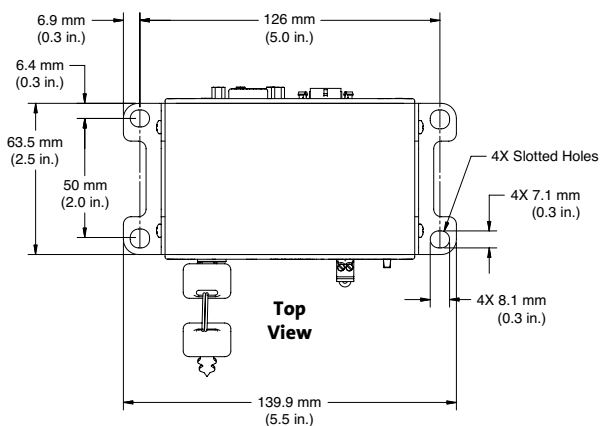


## OBIS LX/LS Single Laser Remote

Full Feature Laser Remote and Power Supply

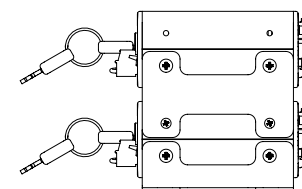
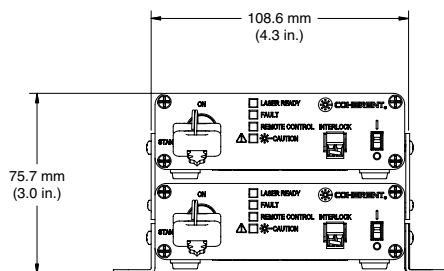
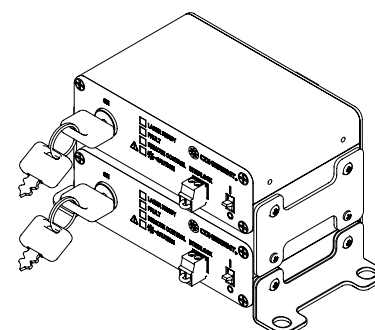
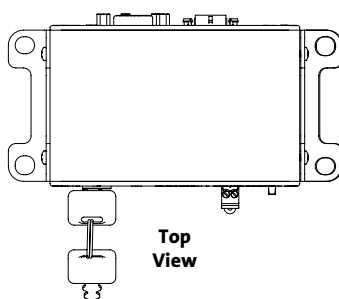
### OBIS LX/LS Single Laser Remote Mounting Brackets and Stacking Brackets

(included with OBIS LX/LS Single Laser Remote)



### Example of Stacking OBIS LX/LS Single Laser Remotes

(mounting bracket included, second remote sold separately)





## OBIS LX/LS Single Laser Remote

Full Feature Laser Remote and Power Supply

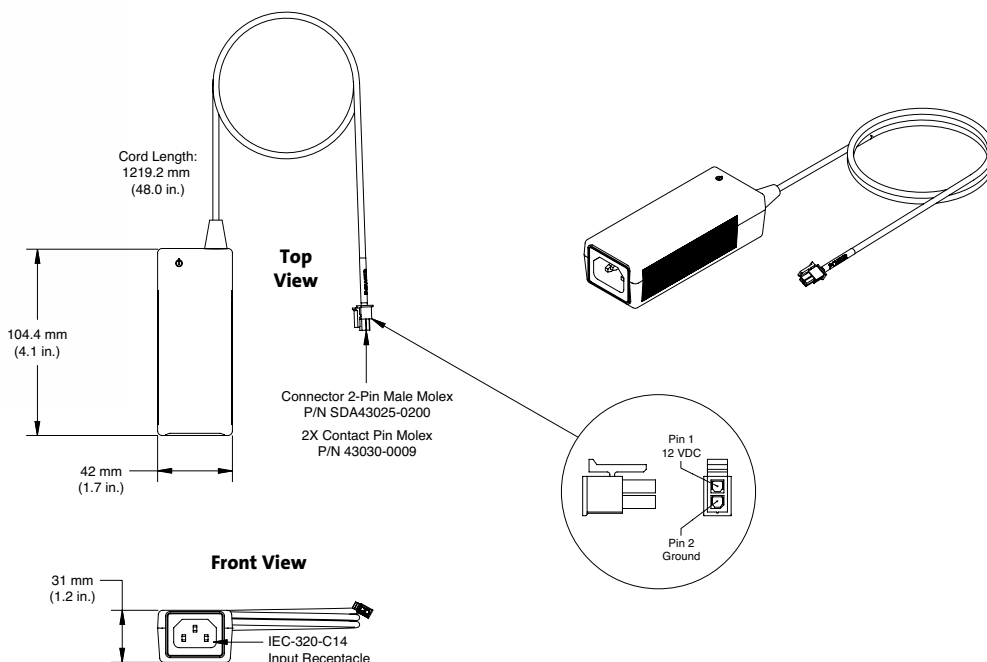
### OBIS Single Laser Power Supply

(included with OBIS LX/LS Single Laser Remote)

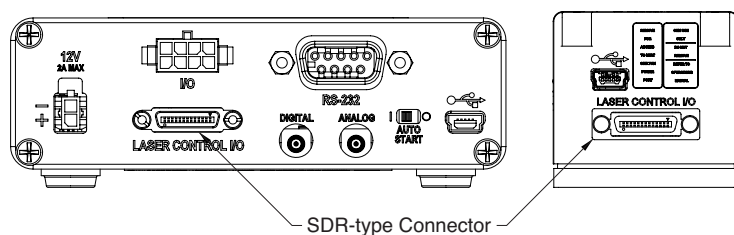


Power Cord sold separately

OBIS Single Laser Remote Power Supply offers 12VDC output to the OBIS Remote and has an universal input of 100-240 VAC (47-63 Hz).



OBIS Single Laser Remote requires a SDR-type cable to connect the Laser to the Remote. This cable carries power, signals and communications. Available in 0.3m, 1m and 3m lengths. Sold separately. (Note: if buying an OBIS Laser System then the OBIS laser is shipped with the OBIS Single Laser Remote and a 1-meter SDR-type cable.)



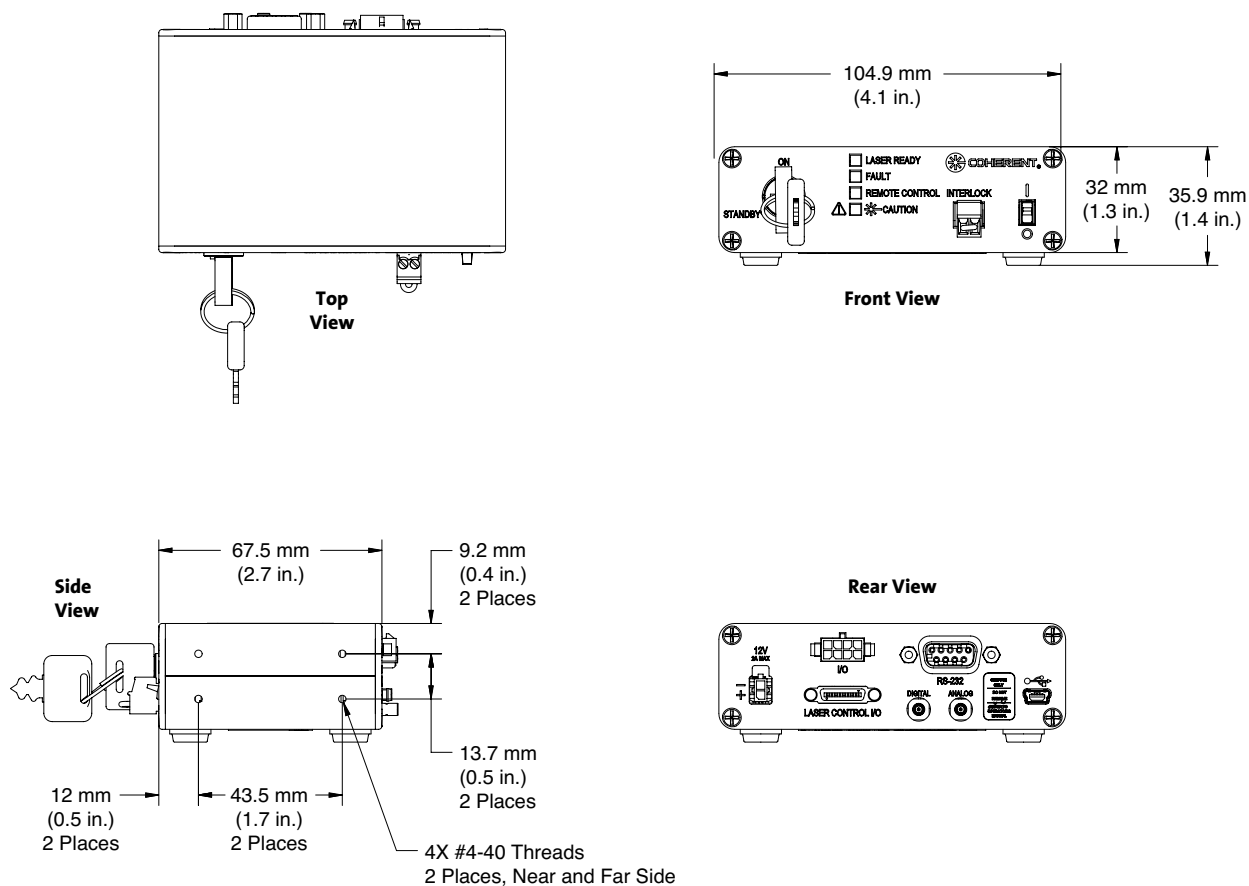
# OBIS LX/LS Single Laser Remote

Full Feature Laser Remote and Power Supply



## Mechanical Specifications

### OBIS LX/LS Single Laser Remote



Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all OBIS LX/LS Single Laser Remotes. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.

# OBIS LX/LS 6-Laser Remote

Laser Remote and Power Supply for up to Six Lasers

OBIS LX and OBIS LS laser products come with a variety of accessories to support your application needs.

The OBIS 6-Laser Remote for OBIS LS and OBIS LX offers power to six lasers in a convenient CDRH-compliant interface.

As with all OBIS LX and OBIS LS lasers, the laser itself offers a stand-alone all-in-one laser solution. The OBIS laser comes with a Power Connection, USB Connection, Fan Connection and a SDR-type Connection for laser control I/O. All of these are on the back panel of every OBIS LX/LS laser.

To simplify integration the OBIS 6-Laser Remote connects to the 12VDC Power Input on the back of the OBIS Laser. This allows the OBIS 6-Laser Remote to provide power On/Off to the laser.

For applications requiring laser status and control, the USB on the back of each OBIS Laser can be used to communicate with the laser directly.

The OBIS 6-Laser Remote is not recommended for applications that require Analog or Digital Modulation.

OBIS 6-Laser Remote comes complete with mounting brackets and hardware to mount the remote to a table or stack remotes.

**Figure 1:** Individual labels included for the laser wavelength identification.



## **OBIS LX/LS 6-Laser Remote Features:**

- Compact size
- Laser safety features (CDRH) such as key switch and interlock
- Laser On/Off status indicators
- Compact single power supply included
- Brackets for mounting and stacking included

## **OBIS LX/LS 6-Laser Remote Applications:**

- Laboratories needing CDRH features
- Applications wanting a simple remote control to turn the lasers On and Off
- Applications that do not require Analog or Digital modulation

[www.Coherent.com/OBIS6-LaserRemote](http://www.Coherent.com/OBIS6-LaserRemote)

## OBIS LS/LX 6-Laser Remote

<sup>1</sup> Non-condensing.

355	594	2
375	635	2
405	637	3
415	640	3
420	647	4
445	650	4
458	660	5
473	685	5
488	730	6
505	785	6
514	830	7
520	980	7
532	0	8
552	0	8
561	1	9
588	1	9

## OBIS LX/LS 6-Laser Remote

Laser Remote and Power Supply for up to Six Lasers

**Figure 3:** REAR VIEW. Six color coded power cables included. Interlock included. Laser sold separately.



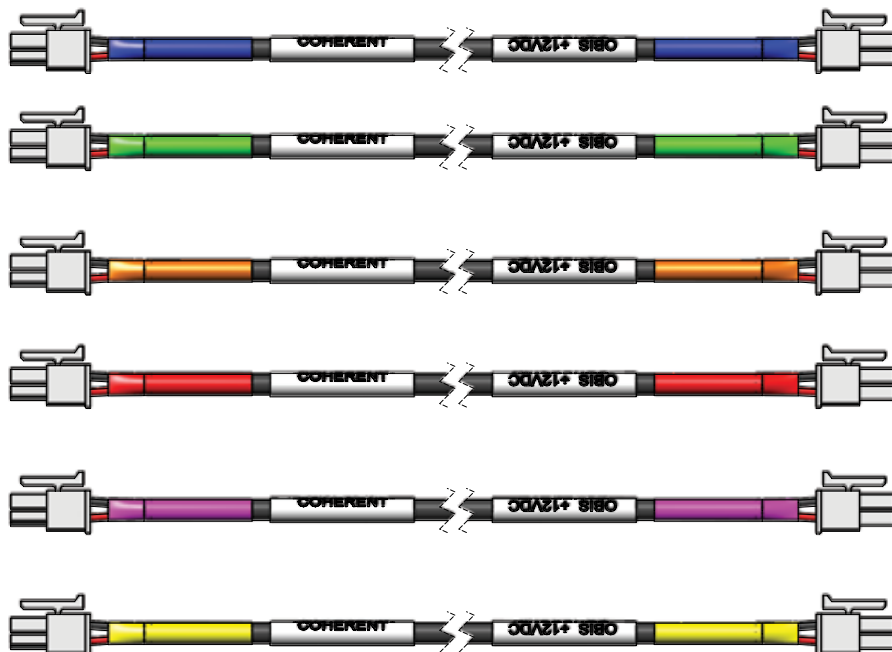
**Figure 4:** Single power supply included to drive six lasers with remote.



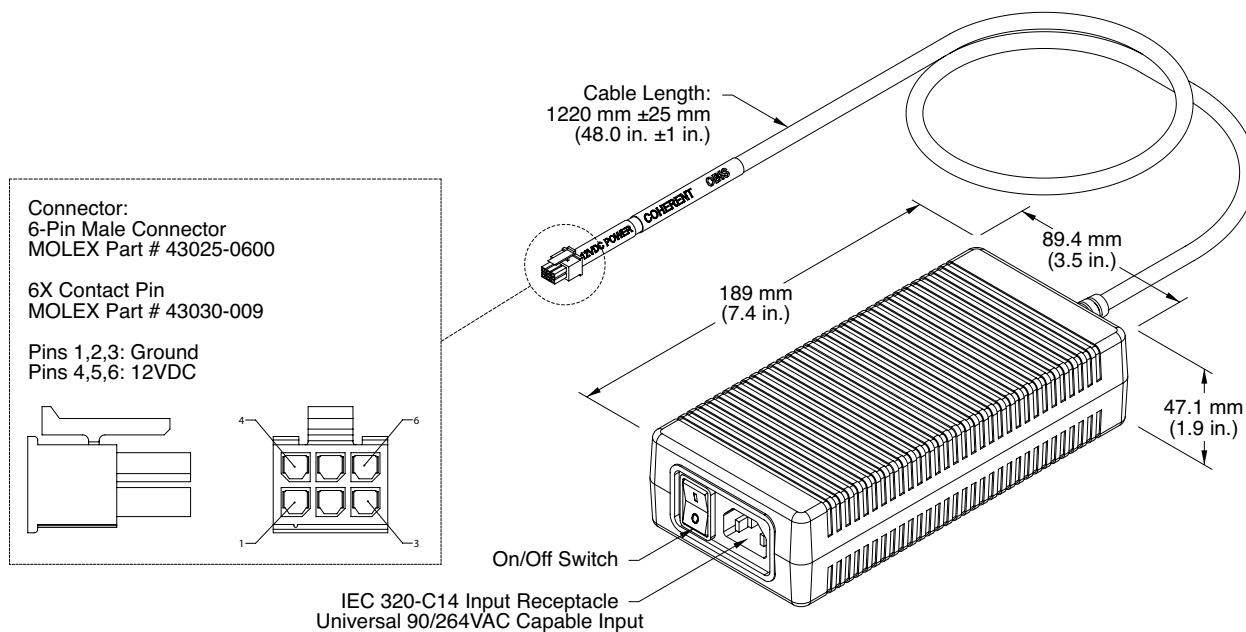
## OBIS LX/LS 6-Laser Remote

Laser Remote and Power Supply for up to Six Lasers

**Figure 5:** Six remote-to-laser power cables included. Color coded for easy installation and identification. One meter length.



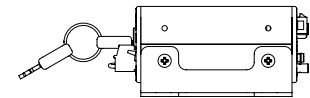
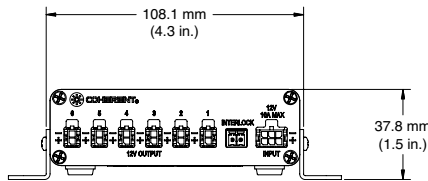
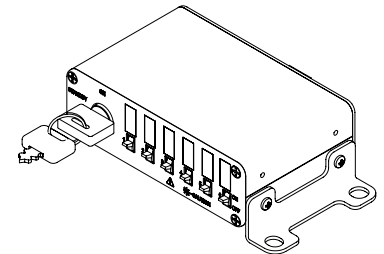
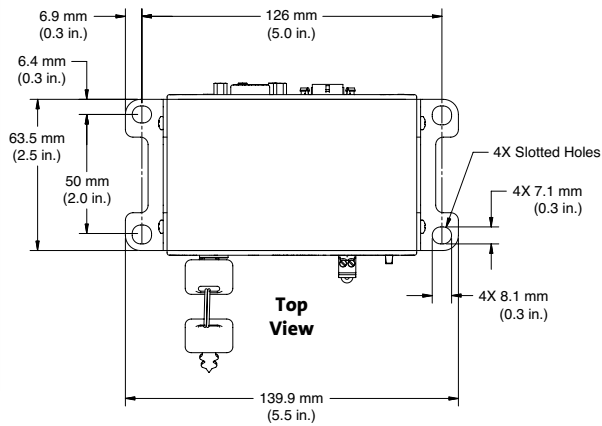
**Figure 6:** Power Supply with IEC-320 universal input. Includes On/Off switch.



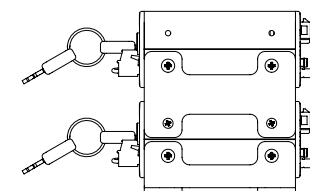
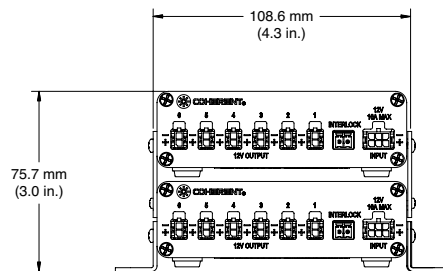
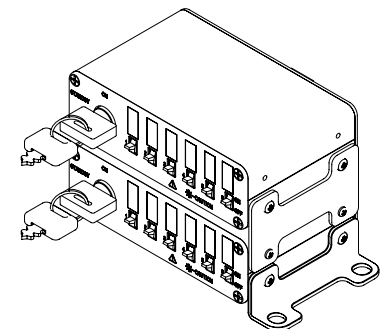
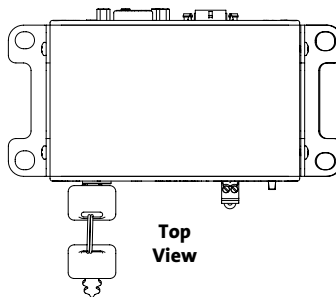
## OBIS LX/LS 6-Laser Remote

Laser Remote and Power Supply for up to Six Lasers

### OBIS LX/LS 6-Laser Remote Mounting Brackets and Stacking Brackets (included with OBIS LX/LS 6-Laser Remote)



### Example of Stacking OBIS LX/LS 6-Laser Remotes (mounting bracket included, second remote sold separately)

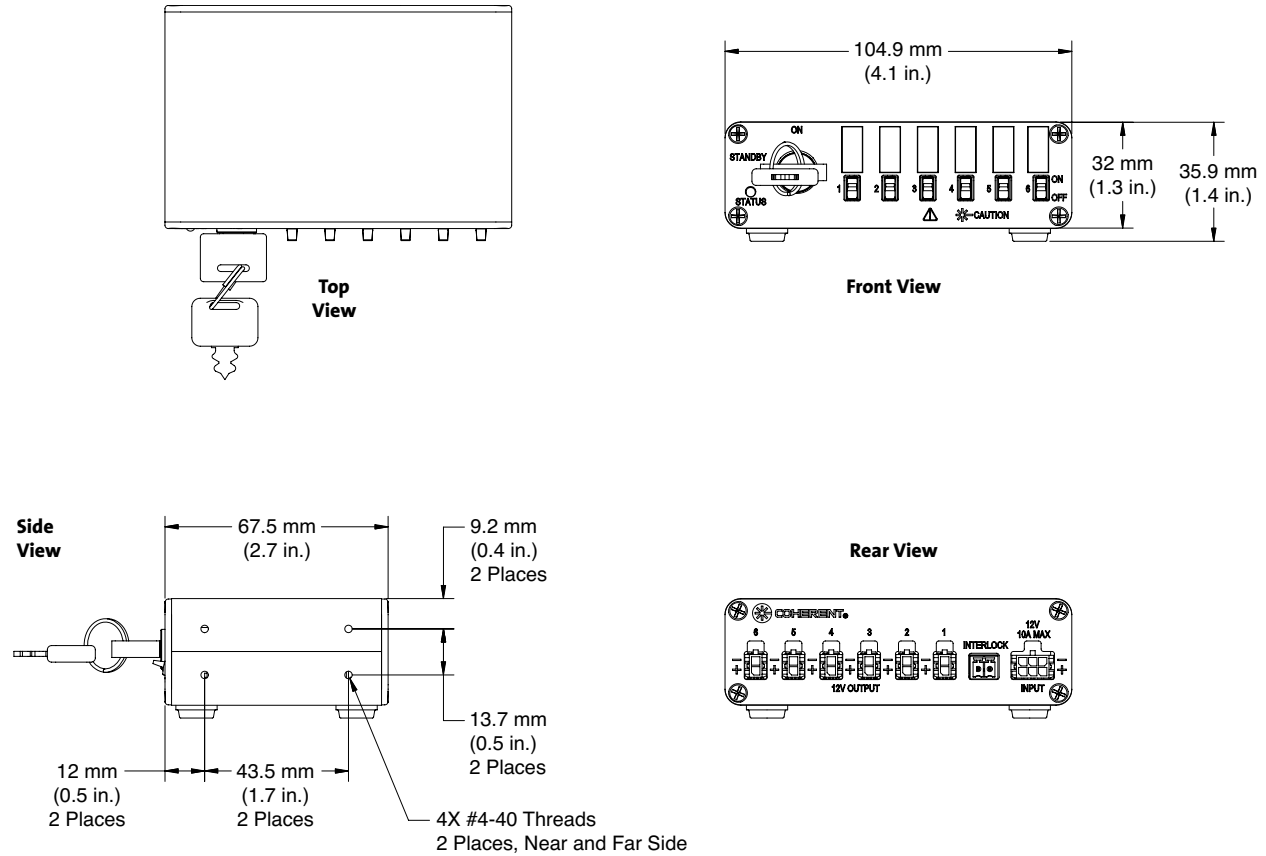


## OBIS LX/LS 6-Laser Remote

Laser Remote and Power Supply for up to Six Lasers

### Mechanical Specifications

#### OBIS LX/LS 6-Laser Remote



Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all OBIS LX/LS 6-Laser Remotes. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.



# OBIS LX/LS Heat Sink

## Heat Sink with Fan for Thermal Management

OBIS LX and OBIS LS laser products come with a variety of accessories to support your application needs.

As with all OBIS LX and OBIS LS lasers, the laser itself offers a stand-alone all-in-one laser solution. The OBIS laser comes with a Power Connection, USB Connection, Fan Connection and a SDR-type Connection for laser control I/O. All of these are on the back panel of every OBIS LX/LS laser.

To simplify integration, the OBIS LX/LS accessories offer a separate Heat Sink with an integrated fan. The Heat Sink offers a convenient way to raise the laser beam height off the table and provide thermal management. The fan simply plugs into the back of the OBIS LX or OBIS LS laser to receive 12V DC power.



### OBIS LX/LS Heat Sink Features:

- **Small footprint**
- **Rugged design**
- **Precision dowel pin laser positioning**
- **Convenient 69 mm (2.7 inch) beam height**
- **Integrated cooling fan with vibration isolation**
- **Output beam centered on standard table bolt pattern**
- **Universal mounting to imperial or metric bolt pattern**
- **Proven stable performance over time and temperature**
- **Fan power connector plugs directly to OBIS Laser Head**
- **Laser can be mounted on top or side for opposite polarization**

[www.Coherent.com/OBISHeatSink](http://www.Coherent.com/OBISHeatSink)

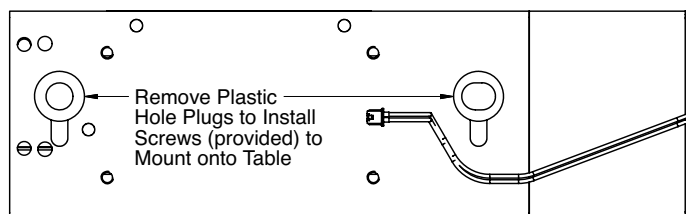
## OBIS LX/LS Heat Sink

### Heat Sink with Fan for Thermal Management

#### Top and Side Mount Plug Holes

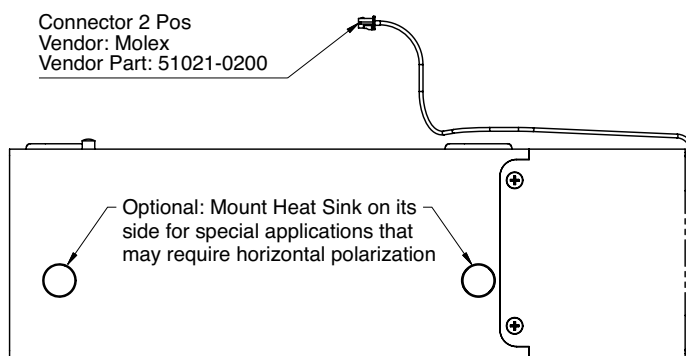
Allow for Heat Sink to be mounted in either direction. Need horizontal polarization – mount the Heat Sink with the laser on the side.

#### Top Mount Plug Holes



Connector 2 Pos  
Vendor: Molex  
Vendor Part: 51021-0200

#### Side Mount Plug Holes



# OBIS LX/LS Heat Sink

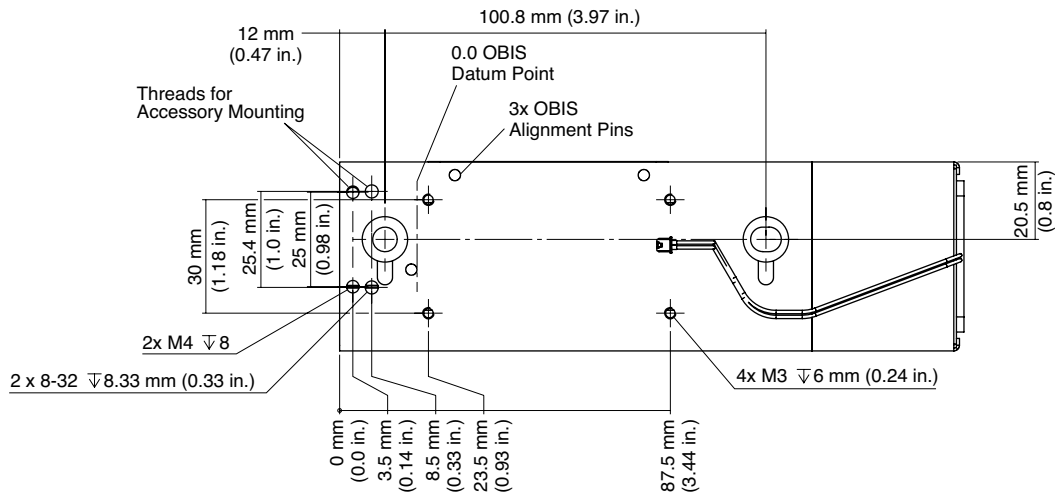
Heat Sink with Fan for Thermal Management



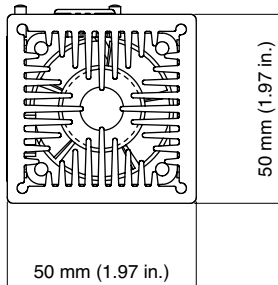
## Mechanical Specifications

### OBIS LX/LS Heat Sink

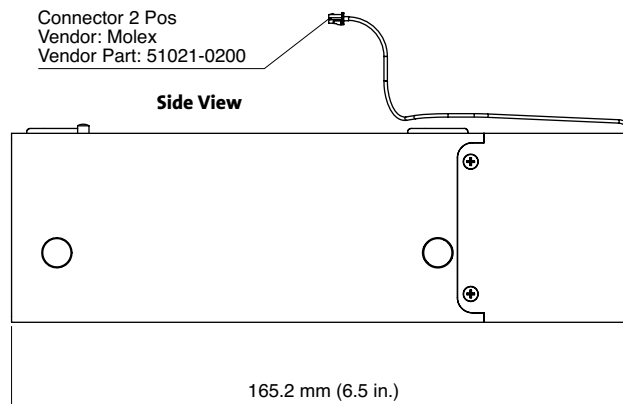
### Top View



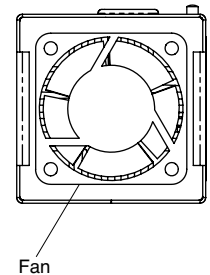
### Front View



### Side View



### Rear View



Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all OBIS LX/LS Heat Sinks. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.

# OBIS LX/LS Laser Box

## Laser Mount with Cooling, Interface and Power Supply

OBIS LX and OBIS LS laser products come with a variety of accessories to support your application needs.

The OBIS Laser Box for OBIS LS and OBIS LX offers all the features from the laser in a convenient CDRH-compliant interface with convection cooling for five lasers.

As with all OBIS LX and OBIS LS lasers, the laser itself offers a stand-alone all-in-one laser solution. OBIS lasers come with a Power Connection, USB Connection, Fan Connection and a SDR-type Connection for laser control I/O. All of these are on the back panel of every OBIS LX/LS laser.

To simplify integration, the OBIS Laser Box connects to the single SDR-type connector for power, signals and communication. The OBIS Laser Box then brings all of these features to the front panel controls and connectors.

The OBIS Laser Box offers stability over temperature with conduction cooling for the laser baseplate and cooling fans to maintain the convection cooling.

Every OBIS Laser Box comes with a separate 12V DC power supply with capacity to drive the five lasers, interface and cooling.



**Superior Reliability & Performance**

### **OBIS LX/LS Laser Box Features:**

- **Integrated five bay mount for OBIS lasers**
- **Heat sinks and cooling fans**
- **Modulation inputs for analog and digital for five lasers**
- **USB and RS-232 interface for additional control from host computer**
- **Coherent Connection software for PC**
- **Status indicators for each laser**
- **External power supply**
- **Laser safety features such as key switch and interlock**

### **OBIS LX/LS Laser Box Applications:**

- **Laboratories needing CDRH features**
- **Applications wanting a simple Analog or Digital inputs to control the laser**
- **Applications wanting thermal management (cooling) for the lasers**

[www.Coherent.com/OBISLaserBox](http://www.Coherent.com/OBISLaserBox)

## OBIS LX/LS Laser Box

Laser Mount with Cooling, Interface and Power Supply

### System Specifications

### OBIS LS/LX Laser Box

OBIS Laser Box	
Laser Box – five bay <sup>1</sup>	Part #1228877
Power Supply <sup>2</sup>	Included
Host Computer Remote Control via USB <sup>3</sup>	USB 2.0, Mini B
Host Computer Remote Control via RS-232 <sup>3</sup>	RS-232, 115.2K, 8N1, DB-9F
Analog Inputs, 5 each	SMB Connector, 0V to 5V, 2000 Ohm input impedance
Digital Inputs <sup>4</sup> , 5 each	SMB Connector, 0V to 3V, 50 Ohm input impedance
Interlock	Yes, included with shorting wire
Laser Status Indicators	Yes, Individual LED for each Laser
Warm-up Time (minutes)(from cold start)	<2
Coherent Connection Software for PC	Included on USB drive with user manual
Safety	Key switch and interlock

### Utility and Environmental Requirements

Power Consumption (W)(typical)	5 (without lasers)
Power Consumption (W)(maximum)	140 (with 5 lasers)
Internal Cooling Fan	Yes, 3 each
Power Input to Laser Box, 6 Pin (VDC)	10 to 14 at 10A maximum, Molex P/N 43025-0600 for mating connector
Power Cord (USA)	2.4m (8 ft.)
Operating Condition <sup>5</sup> (°C)	10 to 40 for OBIS LX, 10 to 35 for OBIS LS
Non-operating Condition <sup>5</sup> (°C)	-10 to 60
Shock Tolerance (g)(6 ms)	20
Operating Voltage (VAC)	90 to 264, 47 to 63 Hz
Dimensions (L x W x H)	
Laser Box	241 x 184 x 88 mm (9.5 x 7.3 x 3.5 in.)
Power Supply	189 x 89.4 x 47.1 mm (7.4 x 3.5 x 1.9 in.)
Weight	
Laser Box	3.9 kg (8.5 lbs.)
Power Supply	0.9 kg (2.0 lbs.)

<sup>1</sup> Lasers sold separately.

<sup>2</sup> Power supply included. Order item number 1211389 for spare or replacement.

<sup>3</sup> Host computer not provided. RS-232 and USB cable not provided.

<sup>4</sup> Digital Modulation can be driven up to 5 Volts.

<sup>5</sup> Non-condensing.

### Example of OBIS Laser System

**Figure 1:** Laser Box with the lid removed



**Figure 2:** Laser Box example as part of a Galaxy beam combiner system. Lasers and Galaxy Beam Combiner sold separately.



**Figure 3:** Laser Box example with 5 lasers installed. Lasers sold separately.

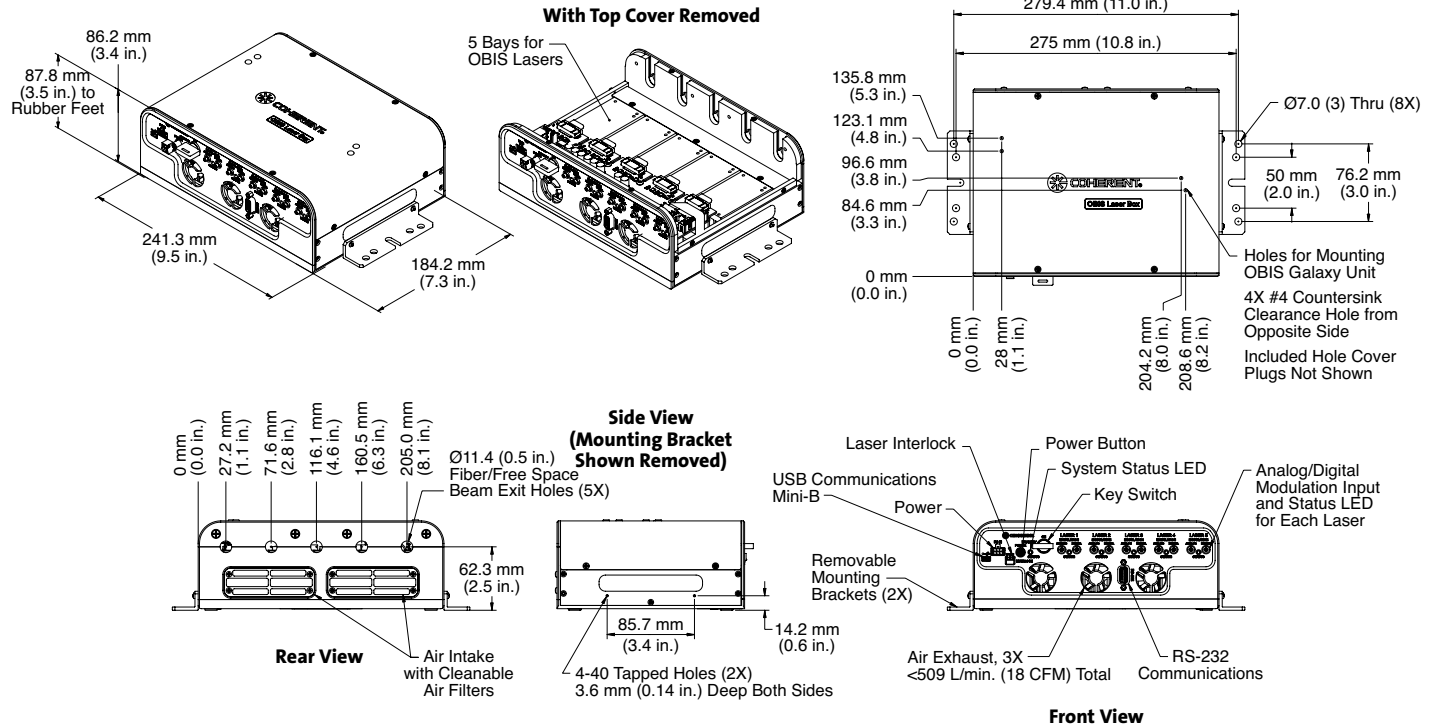


# OBIS LX/LS Laser Box

Laser Mount with Cooling, Interface and Power Supply

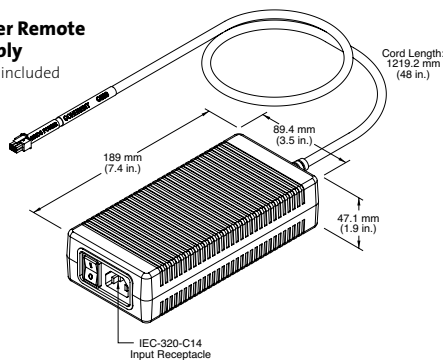
## Mechanical Specifications

### OBIS LS/LX Laser Box



### OBIS 6-Laser Remote Power Supply

Part #1211389 included



Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

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Coherent offers a limited warranty for all OBIS Laser Boxes. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.

# Sapphire Driver Unit

Operate, Control and Monitor Sapphire Laser Heads

The Sapphire Driver Unit provides controller and power supply in a wall plug-ready box, featuring a standby/laser ON switch and remote control options via Analog, RS-232 and USB interface.

The Driver Unit enables and simplifies stand-alone applications: it can operate, control and monitor all laser heads of the Sapphire line: Sapphire LP, Sapphire FP, Sapphire SF. A Sapphire CDRH laser head and a Sapphire Driver Unit when properly installed will be CDRH compliant.

## Sapphire Driver Unit Features:

- One-box wall plug controller and power supply
- Enables stand-alone applications (CDRH Compliant)
- Standby/Laser ON key switch
- Remote interlock
- Remote control option via Analog, RS-232, or USB interface
- Laser power adjustment and graphic display (optional)
- Front panel control with laser power adjustment and status display (optional)
- Status LEDs

## Sapphire Driver Unit for:

- Sapphire LP
- Sapphire FP
- Sapphire SF



[www.Coherent.com/SapphireDriverUnit](http://www.Coherent.com/SapphireDriverUnit)

# Sapphire Driver Unit

Operate, Control and Monitor Sapphire Laser Heads



## Utility and Environmental Requirements

Power Consumption (VA)	<140
Operating Voltage	88 to 264 VAC, 50/60 Hz
Ambient Temperature	
Operating Conditions	10 to 40°C (50 to 104°F), non-condensing
Non-Operating Condition	-30 to 60°C (-22 to 140°F)
Dimensions <sup>1</sup> (L x W x H)	196 X 164 X 99.5 mm (7.72 x 6.46 x 3.92 in.)
Cable Length (Head to Controller)	2 m (6.56 ft.), optional 5 m (16.4 ft.)
Weight	1.85 kg (4.08 lbs.)

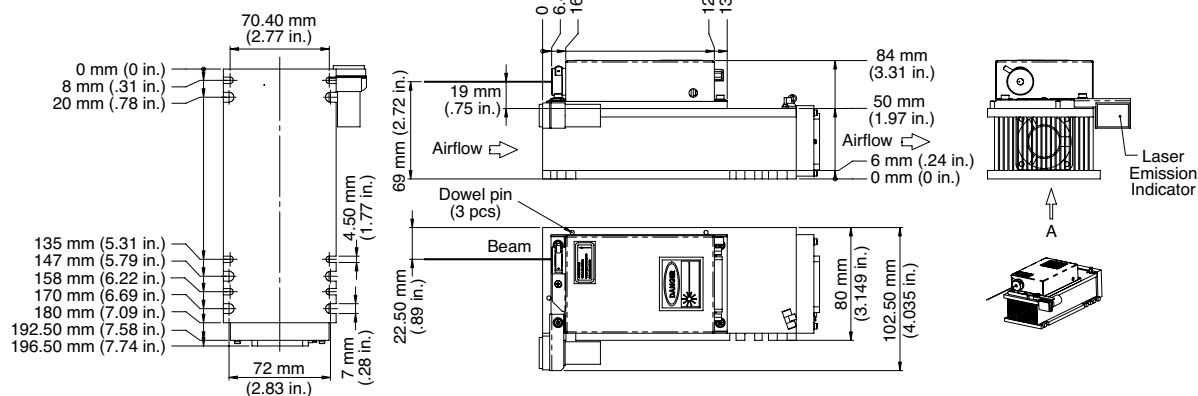
## Sapphire Driver Unit

## Measurement Tools

Meter	FieldMax™-TO
Sensor	PS10Q

<sup>1</sup> Please consider additional space for the front panel switches and the cable connections on the rear panel.

The optional laser emission indicator is located at the end of a 5 m (16.4 ft.) cable which connects to the rear panel of the driver unit. This indicator shall be mounted at the front of the optional heat sink near the beam aperture (required for CDRH compliant operation only).





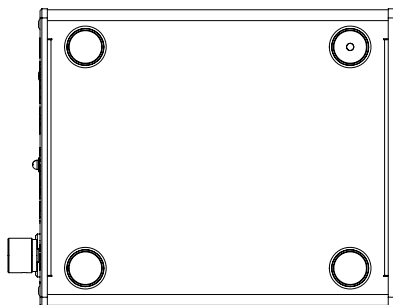
# Sapphire Driver Unit

Operate, Control and Monitor Sapphire Laser Heads

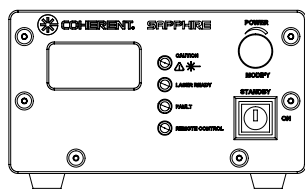


## Mechanical Specifications

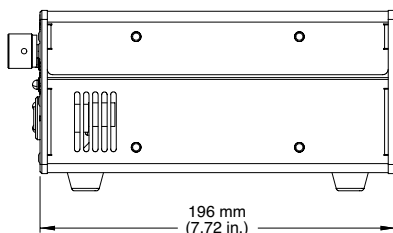
Top View



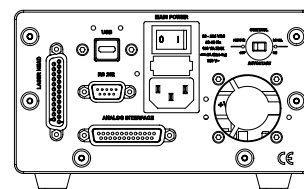
Front View  
(Display Version)



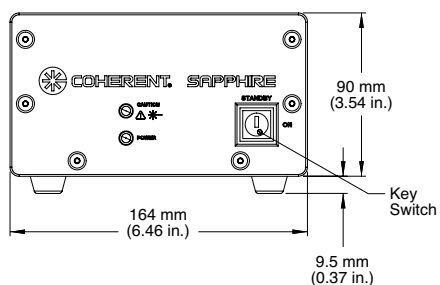
Side View



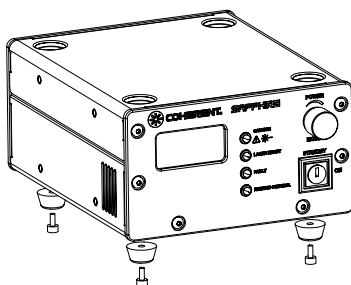
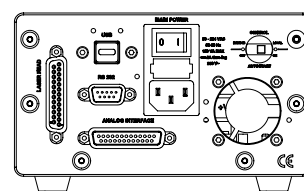
Rear View  
(Display Version)



Front View  
(Non-Display Version)



Rear View  
(Non-Display Version)



Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all Sapphire lasers. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.

# Laser Measurement and Control Accessories.

## Meter, Sensor and Accessory Compatibility

Laser Meter	Sensor	Accessory
OBIS	FieldMaxII-TO	PS10Q
OBIS FP	FieldMaxII-TO	PS10 FC Fiber Adapter
OBIS LG 355	FieldMaxII-TO	PS10
Structured Light Flat Top Projector	Please Call Factory	Please Call Factory
CUBEFieldMaxII-TO	PS10Q	
CUBE FP (Collimated Beam)	FieldMaxII-TO	PS10Q
CUBE FP (FC/PC)	FieldMaxII-TO	PS10 FC Fiber Adapter
Radius	FieldMaxII-TO	PS10Q
Miniature Diode Laser Module	FieldMaxII-TO	PS10Q
Compass 115M	FieldMaxII-TO	PS10Q, OP-2 VIS
Sapphire LP	FieldMaxII-TO	PS10Q
Sapphire FP	FieldMaxII-TO	PS10Q
Sapphire SF	FieldMaxII-TO	PS10Q
Sapphire Driver Unit	FieldMaxII-TO	PS10Q
Genesis CX Series	FieldMaxII-TO	PS10Q
Genesis MX Series STM (OEM)	FieldMaxII-TO	PM10
Genesis MX Series MTM (OEM)	FieldMaxII-TO	PM10
Chameleon Ultra	FieldMaxII-TO	PM10
Chameleon Vision	FieldMaxII-TO	PM10
Chameleon Vision-S	FieldMaxII-TO	PM10
Chameleon PreComp	N/A	N/A
Chameleon MPX	FieldMaxII-TO	PM10

## Product Name Part Number

FieldMaxII-TO	1098579
OP-2 VIS	1098313
PM10	1097901
PS10Q	1098400
PS10	1098350
FC Fiber Adapter	0012-3863



# Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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We accept orders online at [www.Coherent.com](http://www.Coherent.com) (CUBE only), by phone, fax, e-mail or mail. When confirming an order that has been placed, please indicate "confirming" on the order.

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Prices indicated are current at the time of publication, but we reserve the right to change these without notice. Prices are FOB origin, and do not include freight, duty or any applicable taxes.

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Acceptable terms of payment for domestic orders include cash with order, major credit card, COD or Net 30 with prior approval of credit.

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Goods are warranted to be free from defects and to work in the manner specified for a period of 12 months from date of shipment. Extended warranty is available on some products.

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Specifications are current at the time of publication, but Coherent reserves the right to change these without prior notice.

**Technical Information**

The technical information provided in this catalog is intended to be helpful in the application of Coherent products, but we do not accept responsibility for its use.

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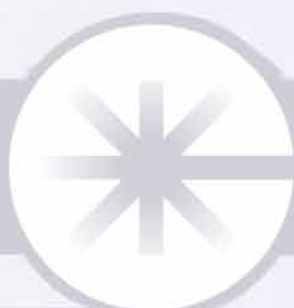
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Brochures, Tech Notes, Data Sheets

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